Calculus
M 6 February 2012

RESET THE SESSION

SET THE PARTICIPANT LIST

PLUG IN THE RECEIVER

Boxed answers agree with TurningPoint answers

Points agree with TurningPoint points

Points total to 100

Topics covered are in bounds

QUIZ
FOLLOWS

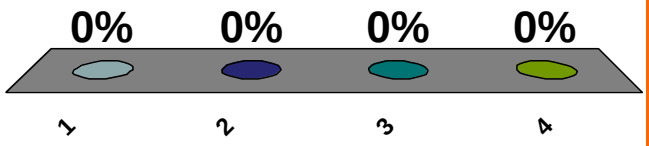
line's slope $= 8$
goes through $(2, 7)$
equation?

(a) $x - 7 = 8(y - 2)$

(b) $y - 7 = 8(x - 2)$

(c) $y - 8 = 7(x - 2)$

(d) none of the above



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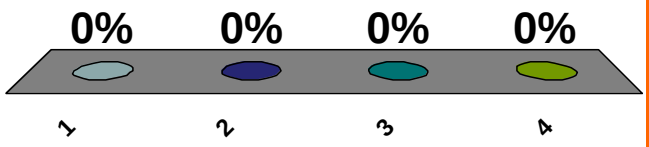
line's slope $= 8$
goes through $(2, 7)$
equation?

(a) $x = 7 + 8(y - 2)$

(b) $y = 7 + 8(x - 2)$

(c) $y = 8 + 7(x - 2)$

(d) none of the above



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tangent line to $y = f(x)$ at $(2, 7)$

$$y - 7 = 8(x - 2)$$

"linearization" of $f(x)$ at $x = 2$?

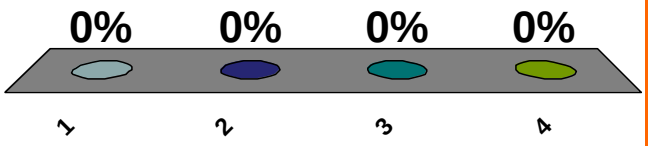
(a) 8

(b) 7

(c) $8(x - 2)$

(d) none of the above

Correct answer: $7 + 8(x - 2)$



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$y = \sin x$

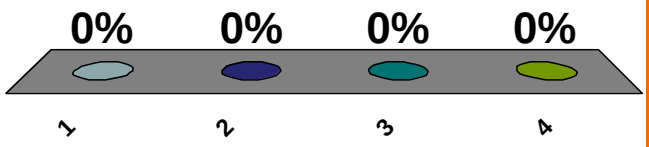
$\triangle y = ??$

(a) $[\sin(x + \triangle x)]$

(b) $[\sin(x + \triangle x)] - [\sin x]$

(c) $\dfrac{[\sin(x + \triangle x)] - [\sin x]}{\triangle x}$

(d) none of the above



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$$P(x) = (x-3)^6(x^2+x+4)$$
$$Q(x) = (x-3)^8(5x^9+9x-7)$$

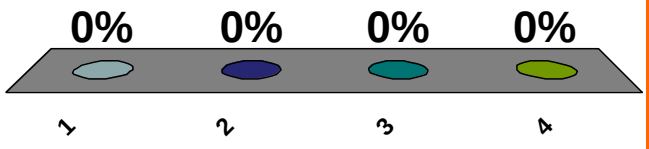
$$\lim_{x \to 3^-} \frac{P(x)}{Q(x)} = ??$$

(a) 0

(b) ∞

(c) $-\infty$

(d) none of the above



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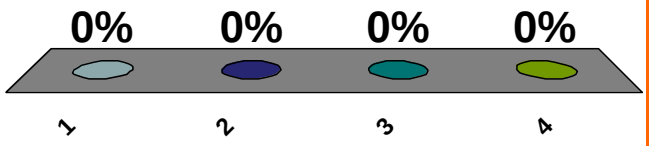
$$\lim_{x \to 2} f(x) = -\infty$$

(a) $x \approx 2 \quad \Rightarrow \quad f(x)$ very neg

(b) $x \approx 2,\ x \neq 2 \quad \Rightarrow \quad f(x)$ very neg

(c) $x \approx 2,\ x < 2 \quad \Rightarrow \quad f(x)$ very neg

(d) none of the above



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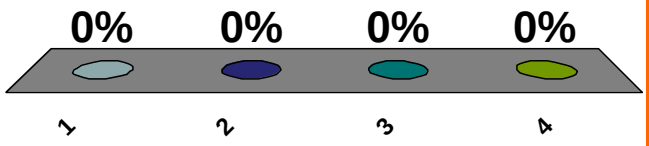
$$\lim_{x \to 0} \left[\frac{6x^5 + 7x^4 - 8x^3}{7x^5 - 2x^4 + 9x^3} \right] = ??$$

(a) DNE

(b) $-8/9$

(c) $6/7$

(d) none of the above



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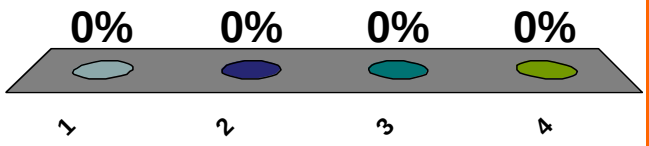
$$\lim_{x \to \infty} \left[\frac{6x^5 + 7x^4 - 8x^3}{7x^5 - 2x^4 + 9x^3} \right] = ??$$

(a) DNE

(b) $-8/9$

(c) $6/7$

(d) none of the above



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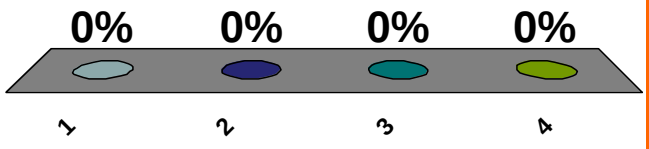
$$\lim_{x \to 0} \frac{3x^3 + 2x}{\sin x} = ??$$

(a) 0

(b) 2

(c) 3

(d) none of the above



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0 of 5

Topic 0140

10 pts

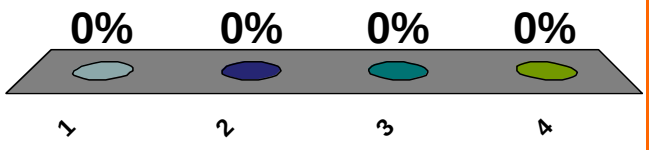
$$\sqrt{x^2+1} \quad \sim \quad ?? \qquad x \to \infty$$

(a) 1

(b) x

(c) $-x$

(d) none of the above



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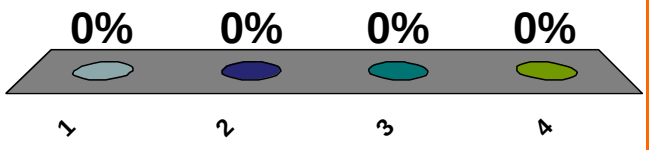
$$\sqrt{x^2+1} \underset{x \to -\infty}{\sim} \; ??$$

(a) 1

(b) x

(c) $-x$

(d) none of the above



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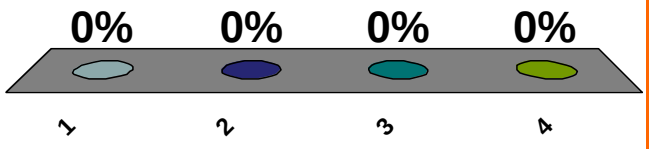
$$\lim_{x \to \infty} \left[\frac{\sqrt{x^2+1}}{3x} \right] = ??$$

(a) DNE

(b) 1/3

(c) $-1/3$

(d) none of the above



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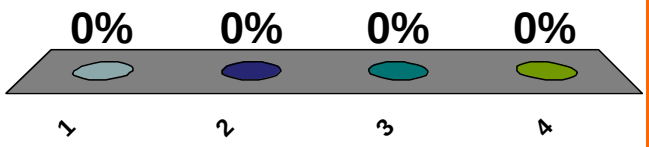
$$\lim_{x \to -\infty} \left[\frac{\sqrt{x^2+1}}{3x} \right] = ??$$

(a) DNE

(b) 1/3

(c) $-1/3$

(d) none of the above



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continuity vs. continuity on interval

differentiability vs. diff. on open interval

LOOK AHEAD

(d/dt)(expr of u, v), *etc.*

deriv. of inv. trig fn

From graph of f to domain of f'

especially: from graph of ln to domain of ln′

especially: from graph of $x^{3/2}$ to domain of its derivative

logarithmic derivatives

$$\lim_{h \to 0} \frac{|h|}{h}$$

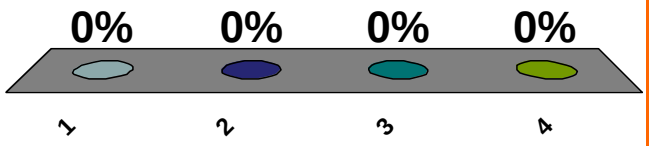
$f(1) = 200$
$f(3) = 800$
avg rate of change?

(a) $(800 - 200)/(3 - 1)$

(b) $(3 - 1)/(800 - 200)$

(c) $(200 - 800)/(3 - 1)$

(d) none of the above



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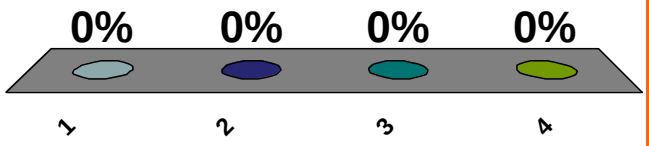
$f(1) = 200$
$f(3) = 800$
avg rate of change?

(a) $(200 - 800)/(1 - 3)$

(b) $(1 - 3)/(200 - 800)$

(c) $(800 - 200)/(1 - 3)$

(d) none of the above



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$f(x) = x^6/6, \quad f'(x) = x^5$

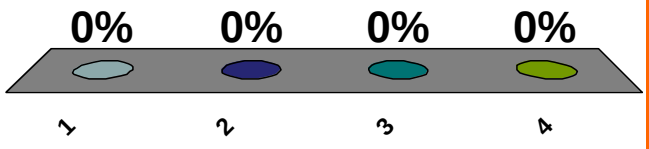
slope of tan. line at $(2\ ,\ 2^6/6)$

(a) $2^6/6$

(b) $(2^6/6)^5$

(c) 2^5

(d) none of the above



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$$\lim_{x\to\infty}\left[\frac{100x^3+2x-1}{x^4-x^3+x^2+1}\right] = ??$$

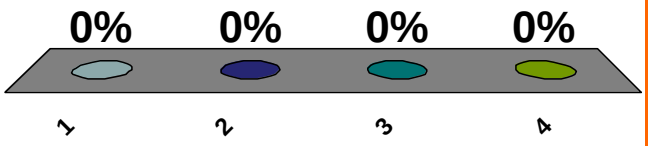
(a) ∞

(b) $-\infty$

(c) 100

(d) none of the above

Correct answer: 0



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$$\lim_{x \to -\infty} \left[\frac{100x^3 + 2x - 1}{x^4 - x^3 + x^2 + 1} \right] = ??$$

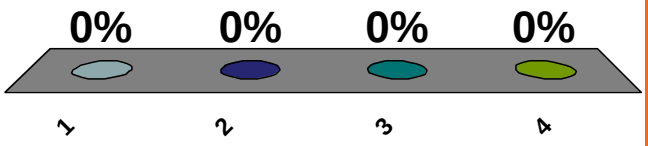
(a) ∞

(b) $-\infty$

(c) 100

(d) none of the above

Correct answer: 0



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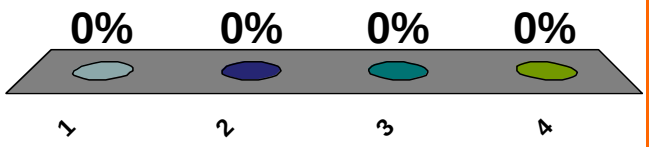
(d) none of the above



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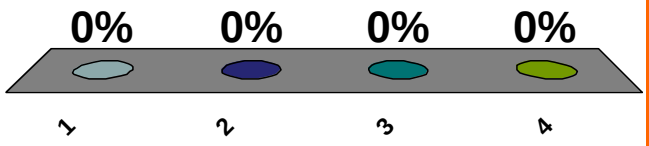
$$\lim_{x \to \infty} \left[\frac{100x^3 + 2x - 1}{x^3 + x^2 + 1} \right] = ??$$

(a) ∞

(b) $-\infty$

(c) 100

(d) none of the above



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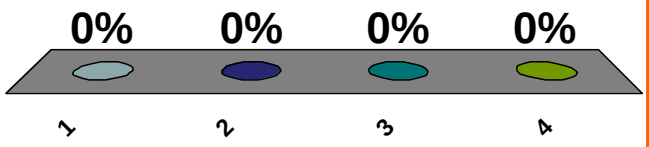
(c) 100

(d) none of the above



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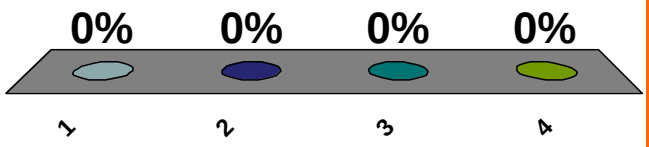

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$$\lim_{x \to -\infty} \left[\frac{100x^3 + 2x - 1}{x + 1} \right] = ??$$

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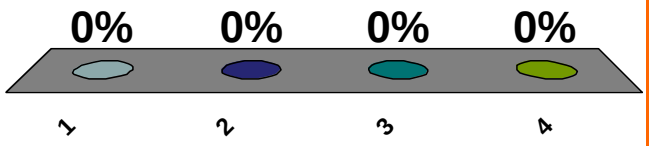

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$$\lim_{x \to \infty} \left[\frac{100x^3 + 2x - 1}{x + 1} \right] = ??$$

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(b) $-\infty$

(c) 100

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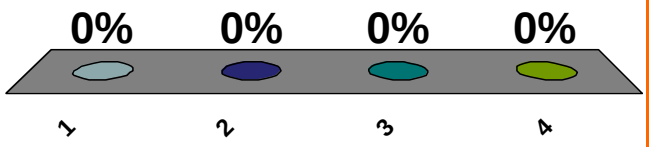

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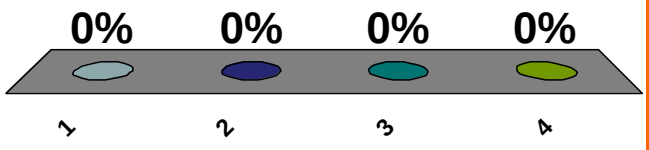
$$\ln(1 + (3/n)) \underset{n \to \infty}{\sim} \; ??$$

(a) $1/n^2$

(b) 1

(c) $3/n$

(d) none of the above



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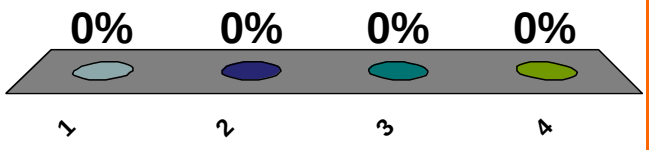
$$\ln(1+5x) \underset{x \to 0}{\sim} \; ??$$

(a) $4x^2$

(b) $5x$

(c) 1

(d) none of the above



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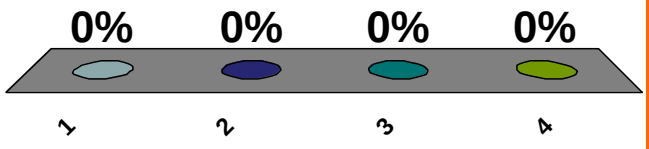
$$\ln(1+5x+4x^2) \underset{x \to 0}{\sim} \; ??$$

(a) $4x^2$

(b) $5x$

(c) 1

(d) none of the above



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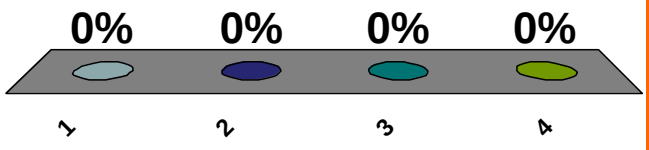
To get graph of $y + 1 = x^3$,
move graph of $y = x^3$ . . .

(a) right 1

(b) left 1

(c) down 1

(d) none of the above



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0 of 5

Topic 0060

0 pts

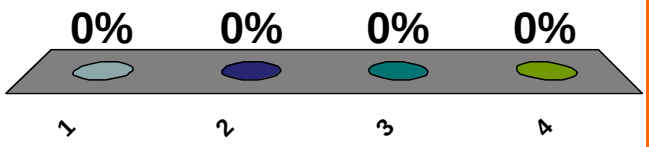
To get graph of $y^2 = \sin(x + \pi)$,
move graph of $y^2 = \sin(x)$ . . .

(a) right π

(b) left π

(c) down π

(d) none of the above



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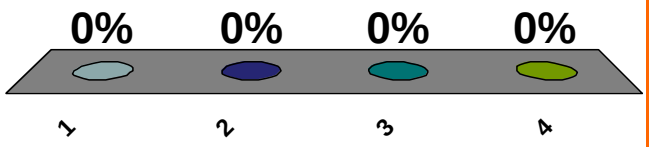
To get graph of $y^2 = \sin(x - \pi)$,
move graph of $y^2 = \sin(x)$ . . .

(a) right π

(b) left π

(c) down π

(d) none of the above



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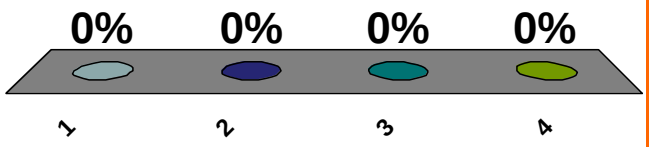
To get graph of $(y+\pi)^2 = \sin(x)$,
move graph of $y^2 = \sin(x)$ . . .

(a) right π

(b) left π

(c) down π

(d) none of the above



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21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

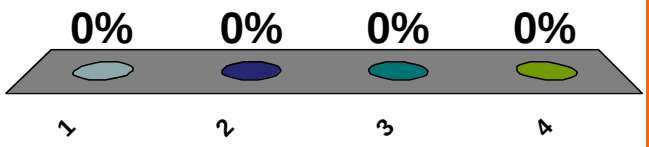
$\sin(\pi/3) = ??$

(a) $\sqrt{2}/2$

(b) $\sqrt{3}/2$

(c) $1/2$

(d) none of the above



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21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

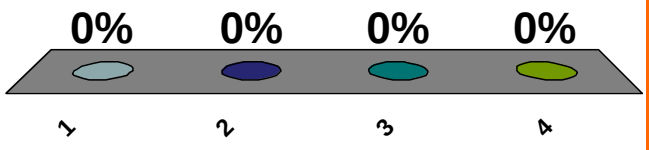
$\arcsin(\sqrt{3}/2) = ??$

(a) $\pi/3$

(b) $\pi/4$

(c) $\pi/6$

(d) none of the above



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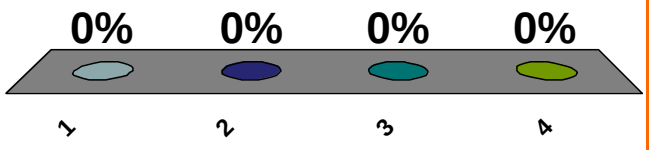
$\sin(3\pi/4) = ??$

(a) $\sqrt{2}/2$

(b) $-\sqrt{2}/2$

(c) $1/2$

(d) none of the above



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21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

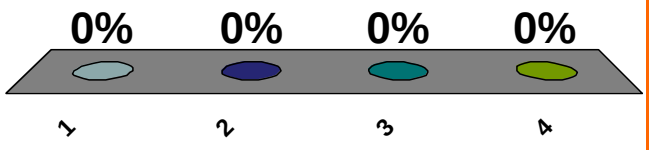
$\arcsin(\sqrt{2}/2) = ??$

(a) $\pi/3$

(b) $\pi/4$

(c) $\pi/6$

(d) none of the above



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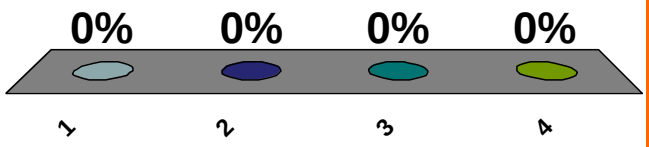
$$\frac{d}{dx}\left[(x^2)(\sin x)\right] = ??$$

(a) $(2x)(\cos x)$

(b) $(2x)(-\cos x)$

(c) $(2x)(\sin x) + (x^2)(\cos x)$

(d) none of the above



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21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

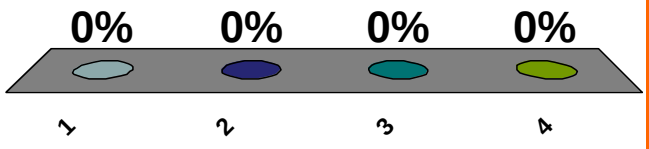
$$\frac{d}{dx}\left[\frac{\sin x}{x}\right] = ??$$

(a) $\dfrac{(\sin x)(1) - (x)(\cos x)}{x}$

(b) $\dfrac{(\sin x)(1) - (x)(\cos x)}{x^2}$

(c) $\dfrac{(x)(\cos x) - (\sin x)(1)}{x^2}$

(d) none of the above



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21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

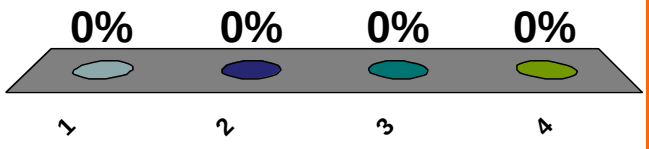
$$\lim_{x \to 5} \left(3x^3 - 2x + 8\right)$$

(a) $(3)(5^3) - (2)(5) + 8$

(b) $-\infty$

(c) ∞

(d) none of the above



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21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

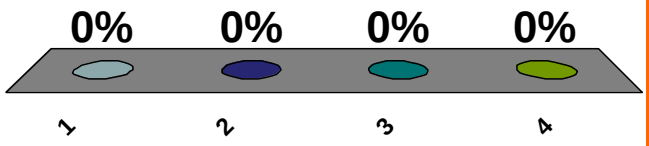
$$\lim_{x \to 5} \left(\frac{3x^3 - 2x + 8}{x - 4} \right)$$

(a) $(3)(5^3) - (2)(5) + 8$

(b) $-\infty$

(c) ∞

(d) none of the above



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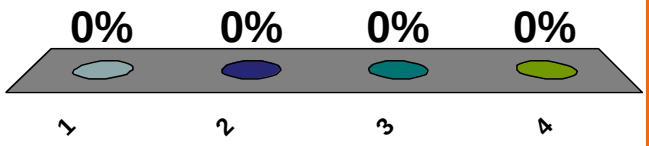
$$\lim_{x \to 5^+} \left(\frac{3x^3 - 2x + 8}{x - 5} \right)$$

(a) $(3)(5^3) - (2)(5) + 8$

(b) $-\infty$

(c) ∞

(d) none of the above



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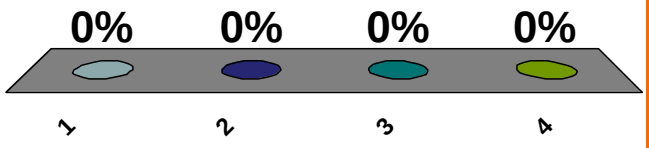
$$\lim_{x \to 5^-} \left(\frac{3x^3 - 2x + 8}{x - 5} \right)$$

(a) $(3)(5^3) - (2)(5) + 8$

(b) $-\infty$

(c) ∞

(d) none of the above



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21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

$$\lim_{x \to 5} \left(\frac{3x^3 - 2x + 8}{x - 5} \right)$$

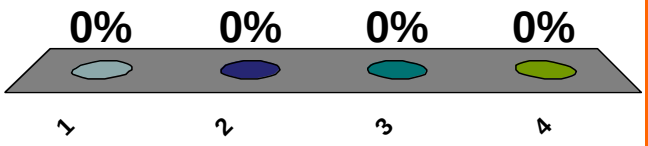
(a) $(3)(5^3) - (2)(5) + 8$

(b) $-\infty$

(c) ∞

(d) none of the above

Correct answer: DNE



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21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

OLD

0170-1. Use the graph of f given below to find the value of each quantity, if it exists.

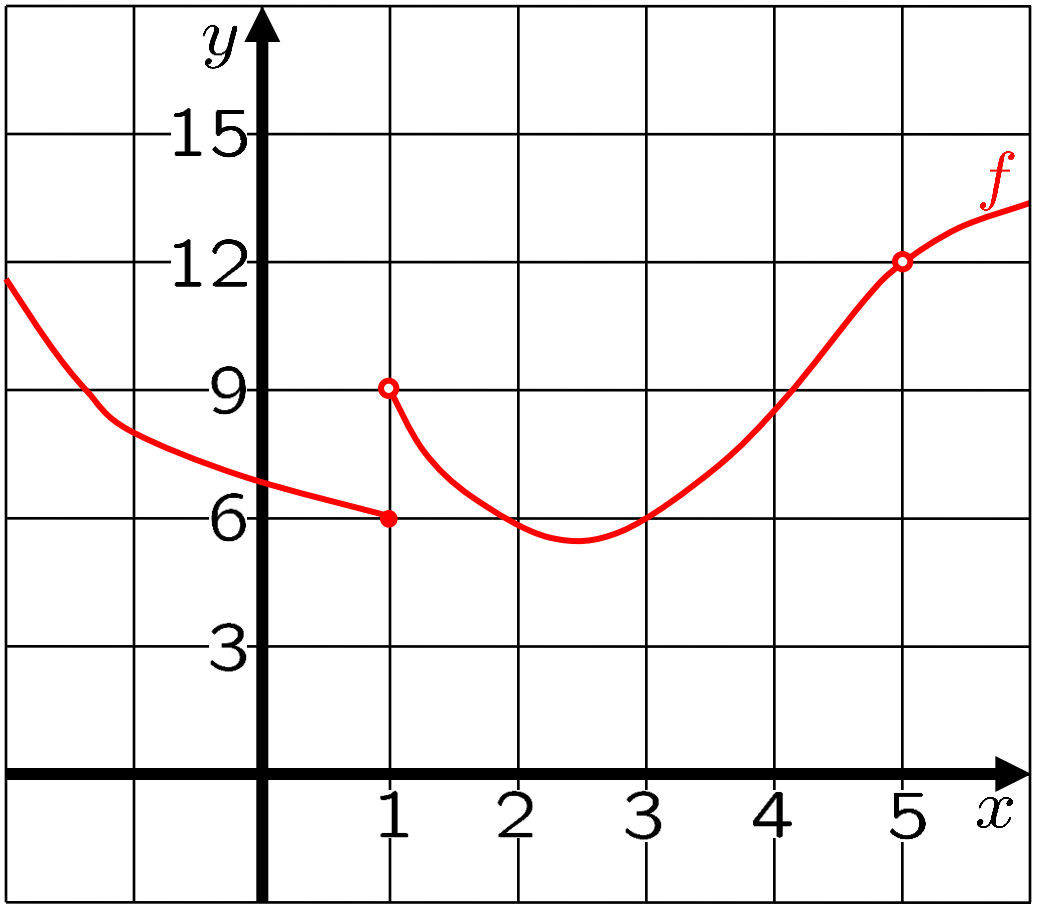
(a) $\lim_{x \to 1^-} f(x)$

(b) $\lim_{x \to 1^+} f(x)$

(c) $\lim_{x \to 1} f(x)$

(d) $\lim_{x \to 5} f(x)$

(e) $f(5)$



OLD

0170-2. Use the graph of f given below to find the value of each quantity, if it exists.

(a) $\lim_{x \to 1^-} f(x)$

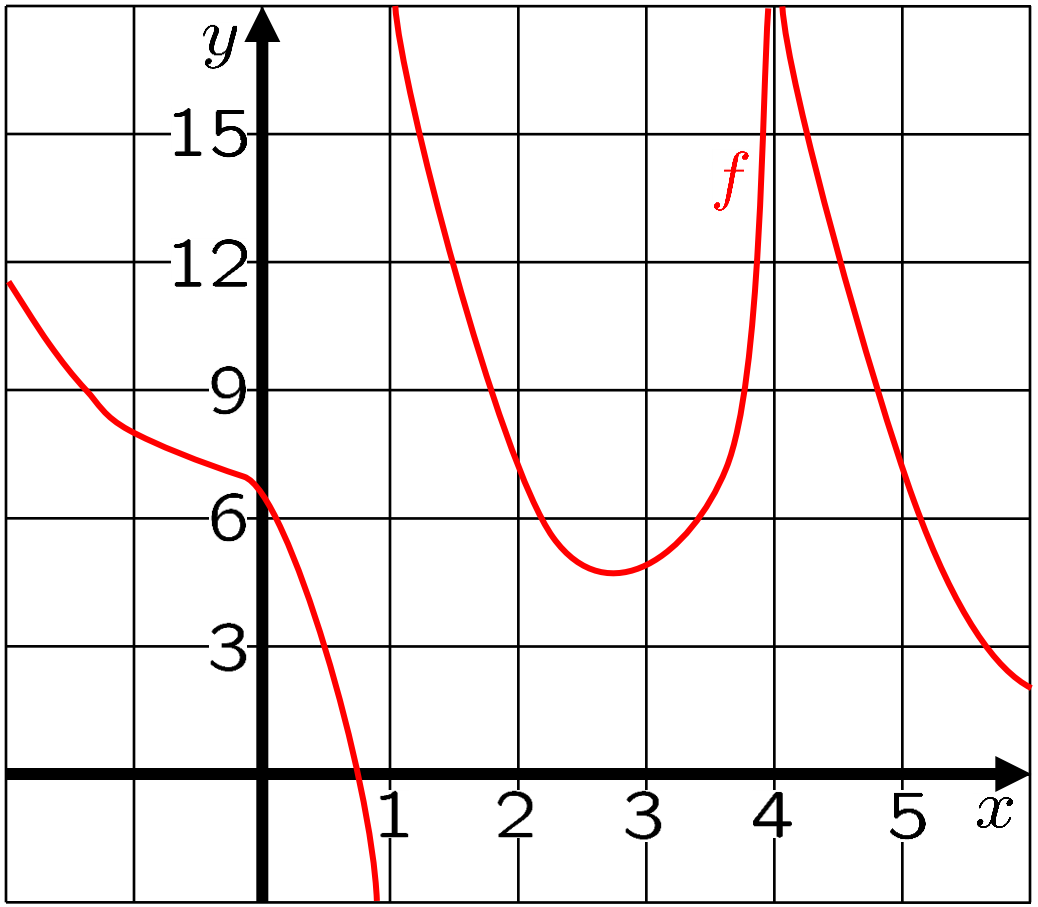
(b) $\lim_{x \to 1^+} f(x)$

(c) $\lim_{x \to 1} f(x)$

(d) $\lim_{x \to 4^-} f(x)$

(e) $\lim_{x \to 4^+} f(x)$

(f) $\lim_{x \to 4} f(x)$



OLD

0170-3. Show a graph of a function h s.t.

$$\lim_{x\to 2^-} h(x) = 7, \qquad \lim_{x\to 2^+} h(x) = 6, \qquad h(2) = 5,$$

$$\lim_{x\to 3} h(x) = -\infty,$$

$$\lim_{x\to 4^-} h(x) = \infty, \qquad \lim_{x\to 4^+} h(x) = -\infty,$$

$$\lim_{x\to -\infty} h(x) = -3 \quad \text{and} \quad \lim_{x\to \infty} h(x) = 1.$$

0170-5. a. Compute $\lim_{x \to 1^-} \dfrac{2x+3}{x-1}$,

OLD

or explain why the limit does not exist.

b. Compute $\lim_{x \to 1^+} \dfrac{2x+3}{x-1}$,

or explain why the limit does not exist.

c. Compute $\lim_{x \to 1} \dfrac{2x+3}{x-1}$,

or explain why the limit does not exist.

tangent slopes for $y = x^3$, esp. at $x = 5$.

$$\lim_{h \to 0} \frac{(5+h)^3 - 5^3}{h}$$

$$\lim_{\triangle x \to 0} \frac{(5+\triangle x)^3 - 5^3}{\triangle x}$$

LOOK AHEAD

differentiate polynomials

differentiate all 6 trig functions

$$\lim_{x \to 0} [\sin(1/x)]$$

$$\lim_{x \to 0} [x(\sin(1/x))]$$

$$\lim_{x \to 0} \left[\frac{2x^3 + x^2}{8x^5 + 3x^4 - 7x^3} \right]$$

$f'(3)$, when $f(x) = 1/x$

derivative of ln

product, quotient, chain rules

SAVE THE SESSION DATA

RETURN TO PRESENTATION