MATH 1271: CALCULUS I
ANSWERS TO THE SAMPLE FINAL

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Below are answers, not complete solutions. On the real test, for the hand-graded problems (the last six), you will have to show all work, but not need to simplify your answers.

(1) E
(2) B
(3) A
(4) C
(5) A
(6) E
(7) C
(8) B
(9) C
(10) D
(11) A
(12) E
(13) B
(14) D
(15) E
(16)

$$\pi \int_{-2}^{2} ((5+\sqrt{4-y^2})^2 - (5-\sqrt{4-y^2})^2) dy,$$

using washers, or

$$2\pi \int_{3}^{7} 2x\sqrt{4-(x-5)^2} dx,$$

using shells.

(17) (a) $(3+\sqrt{17})/2$; (b) $3\sqrt{2}-2$.
(18) (a) $2/3$; (b) $-2\sqrt{1-x}+4\sqrt{(1-x)^3}/3-2\sqrt{(1-x)^5}/5+C$, C runs over the real numbers.
(19) $4\sqrt{2/3}$ and $16/3$.
(20) (a) $(-\infty,\infty)$; (b) 0 and 0; (c) $y=0$; (d) $x=-1$; f decreases before that point and increases afterward; (e) concave up on

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$(-2, \infty)$ and down on $(-\infty, -2)$, with $x = -2$ being the only inflection point; (f) the same shape of a graph as in Figure 11 on p. 320 of the text.

(21) $34\frac{1}{6}$