CALCULUS

The quotient rule

NEW

NEW 0350-1. Differentiate $f(x) = (-x^4 - 6x^3 + 7)e^x$.

NEW 0350-2. Differentiate $u = \dfrac{-x^4 - 6x^3 + 7}{e^x}$.

NEW 0350-3. Differentiate $F(r) = \left(\dfrac{(6/e^r) + 7}{r^4 - 2r^6}\right)\left(\dfrac{2r - 4}{r^3 e^r}\right)$.

NEW 0350-4. Differentiate $G(w) = e^{2-w}$.

Hint: $e^{2-w} = e^2/e^w$.

NEW 0350-5. Differentiate $H(z) = e^{7-2z}$.

Hint: $e^{7-2z} = e^7/[(e^z)(e^z)]$.

NEW 0350-6. Differentiate $y = (\pi^3 - 1)(x^2 + 2x)e^{-2x}$.

NEW 0350-7. Find an equation of the tangent line to $y = \dfrac{2x+4}{-3x-2}$ at $(-1, 2)$.

NEW 0350-8. Find an equation of the tangent line to $y = (x^2 - x + 2)e^x$ at $(0, 2)$.

NEW 0350-9. Find an equation of the tangent line to $y = (x^2 - x + 2)e^{-x}$ at $(0, 2)$.

0350-10. NEW Say $p(7) = 9$ and $p'(7) = 6$.
Say $q(7) = 3$ and $q'(7) = 5$.

a. Let $g(x) = \dfrac{p(x)}{q(x)}$. Compute $g(7)$ and $g'(7)$.

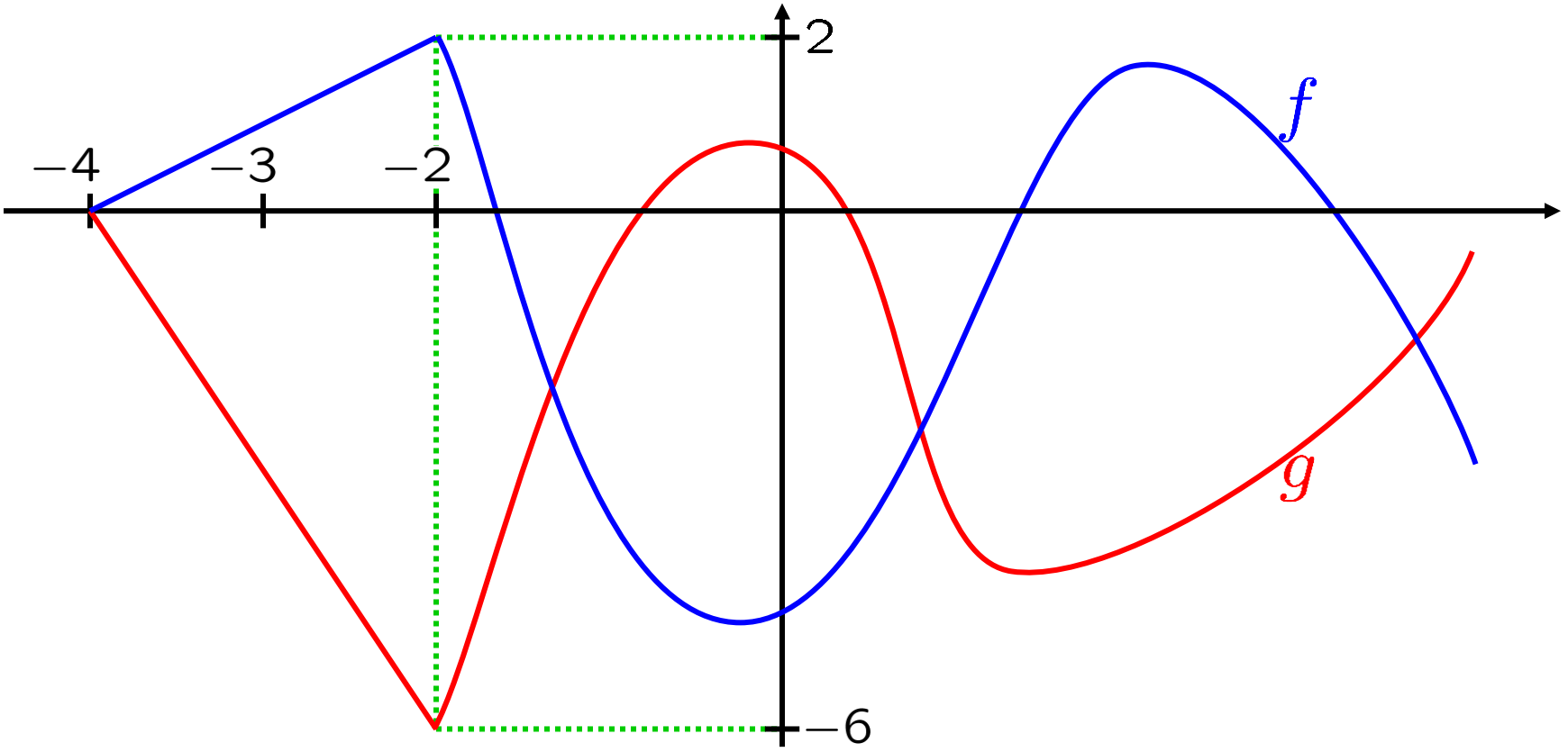
b. Let $h(x) = [p(x)]\,[q(x)]$.
Compute $h(7)$ and $h'(7)$.

0350-11. NEW Say $q(7) = -2$ and $q'(7) = -1$.

a. Compute $\left[\dfrac{d}{dt}\left(e^{-2t}\,(q(t))\right)\right]_{t:\to 7}$.

b. Compute $\dfrac{d}{dt}\left(\left[e^{-2t}\,(q(t))\right]_{t:\to 7}\right)$.

0350-12. The graphs of f and g are shown below.
NEW



a. Find $\left[\frac{d}{ds}\left([f(s)][g(s)]\right)\right]_{s:\to -3}$.

b. Find $\left[\frac{d}{ds}\left(\frac{f(s)}{g(s)}\right)\right]_{s:\to -3}$.

c. Find $\frac{d}{ds}\left([[f(s)][g(s)]]_{s:\to -3}\right)$.

d. Find $\frac{d}{ds}\left(\left[\frac{f(s)}{g(s)}\right]_{s:\to -3}\right)$.

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