

CALCULUS
The quotient rule
OLD

0350-1. Differentiate $f(x) = (2x^5 - 3x + 4)e^x$.

OLD

0350-2. Differentiate $u = \frac{2x^5 - 3x + 4}{e^x}$.

OLD

0350-3.

OLD

Differentiate $F(t) = \left(\frac{2e^t + 4}{(1/t) + t^7} \right) \left(\frac{t}{1 - e^t} \right)$.

0350-4. Differentiate $G(q) = e^{-q}$.

OLD

Hint: $e^{-q} = 1/e^q$.

0350-5. Differentiate $H(y) = e^{2y}$.

OLD

Hint: $e^{2y} = (e^y)(e^y)$.

0350-6. Differentiate $z = (x^7 + 2)e^x$.

OLD

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

0350-8. Find an equation of the tangent line
to $y = (x^3 + 1)e^x$ at $(0, 1)$.

0350-9. Find an equation of the tangent line
to $y = (x^3 + 1)e^{-x}$ at $(0, 1)$.

0350-10. OLD Say $f(2) = 7$ and $f'(2) = 9$.
Say $h(2) = 4$ and $h'(2) = 5$.

a. Let $g(x) = \frac{f(x)}{h(x)}$. Compute $g(2)$ and $g'(2)$.

b. Let $u(x) = [f(x)] [h(x)]$.
Compute $u(2)$ and $u'(2)$.

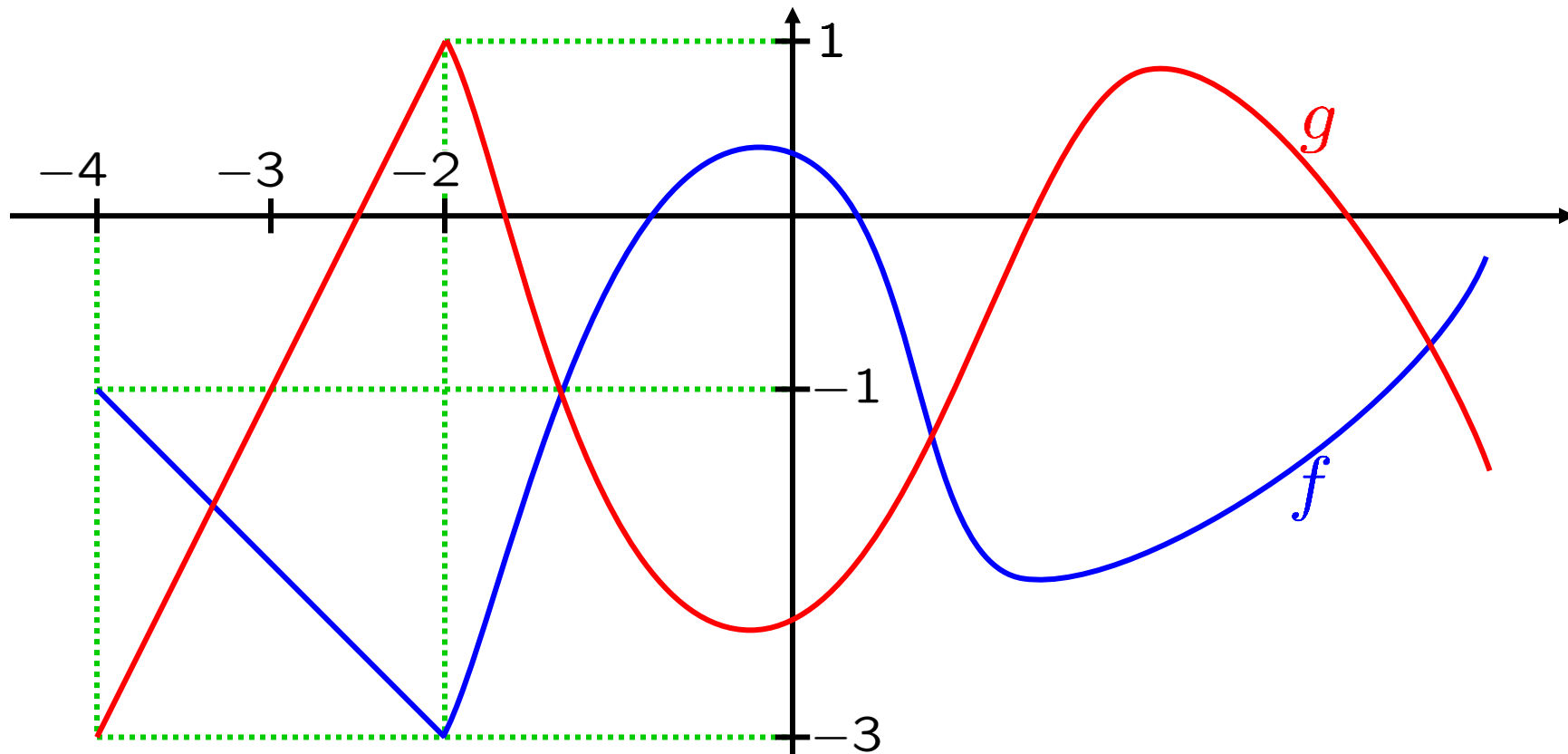
0350-11. OLD Say $v(4) = 3$ and $v'(4) = 8$.

a. Compute $\left[\frac{d}{dt} \left(e^{2t} (v(t)) \right) \right]_{t \rightarrow 4}$.

b. Compute $\frac{d}{dt} \left(\left[e^{2t} (v(t)) \right]_{t \rightarrow 4} \right)$.

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

OLD



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

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