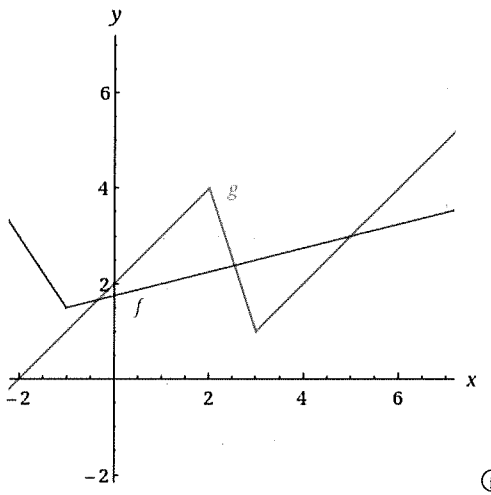
Quiz 5

key

This is a two-stage quiz. During the first stage, use your knowledge & calculator. You have 15 min. In the second stage, you are now welcome to use your books, notes, and students in the class to retake the same quiz. You have the remainder of the quiz time to write one solution (with everyone's name on it!!!) to be turned in for the group.

Show *all* your work. Reasonable supporting work must be shown for any partial credit.

1. Use the graphs of f and g for the questions below



(a) [2] Estimate $\frac{d}{dx}\left(\frac{f}{g}\right)\Big|_{x=1}$

$\frac{g(1)f'(1) - f(1)g'(1)}{[g(1)]^2} = \frac{3 \cdot \frac{1}{4} - 2(1)}{3^2}$

(b) [2] Let $h(x) = f(x^2)$. Estimate $h'(-1)$.

$h'(-1) = f'((-1)^2) \cdot 2(-1)$

$= f'(1) \cdot (-2)$

$= \frac{1}{4}(-2) = -\frac{1}{2}$

2. Let $n(x) = e^x \cos(x) + \sin(x)$.

(a) [3] Find $n'(x)$.

$n'(x) = [e^x \cos(x)]' + [\sin(x)]'$

$= [e^x]'\cos(x) + e^x[\cos(x)]' + [\sin(x)]'$

$= e^x \cos(x) + e^x(-\sin(x)) + \cos(x)$

(b) [3] Find the equation of the line tangent to n when $x = 0$.

Looking for $y - y_1 = m(x - x_1)$

m = slope of line tang to n @ $x = 0$

$= n'(0)$

$= e^0\cos(0) + e^0(-\sin(0)) + \cos(0) = 2$

Pnt $(0, n(0)) = (0, 1)$

So $y - 1 = 2(x - 0)$ plug in

or $y = 2x + 1$