

Key

Quiz 3

Show *all* your work. No credit is given without reasonable supporting work. There are *two* sides to this quiz.

1. (§2.8 #39) [4] Let $g(x) = \frac{1+3x}{5-2x}$. Given that g has an inverse, find g^{-1} .

$$x = \frac{1+3y}{5-2y}$$

$$x(5-2y) = 1+3y$$

$$5x - 2xy = 1 + 3y$$

$$5x - 1 - 2xy = 3y$$

$$5x - 1 = 2yx + 3y$$

$$5x - 1 = y(2x + 3)$$

$$\frac{5x-1}{2x+3} = y$$

alg (+2)

dealt with den +5
order of operations +1
got it all +5

2. [2] (Quad. Wks #11) What are the coordinates of the vertex on the graph of

$$n(x) = 3(x-1)^2? \\ = 3(x-1)^2 + 0$$

$$\Rightarrow \begin{matrix} (+) & (+) \\ (1, 0) \end{matrix}$$

3. (§2.5 #13) Let $f(x) = 2x^2 + 4x + 3$.

(a) [1] Does f have an inverse? Why or why not?

nope, the graph of f is a parabola
 $\begin{matrix} (+) & (-) \\ (+) & \end{matrix}$ parabolas fail the horiz line test.

(b) [3] Complete the square to write f in vertex (standard) form.

$$2x^2 + 4x + 3 = f(x)$$

$$x^2 + 2x + \frac{3}{2} = \frac{1}{2} f(x)$$

$$x^2 + 2x + 1 + \frac{3}{2} = \frac{1}{2} f(x) + 1$$

$$(x+1)^2 + \frac{3}{2} = \frac{1}{2} f(x) + 1$$

$$(x+1)^2 + \frac{3}{2} - 1 = \frac{1}{2} f(x)$$

$$(x+1)^2 + \frac{1}{2} = \frac{1}{2} f(x)$$

$$2 \left[(x+1)^2 + \frac{1}{2} \right] = f(x)$$

$$2(x+1)^2 + 1 = f(x)$$

Knew form (+, -)

Add $\left(\frac{b}{2}\right)^2$ (+)

alg (+) (factored, other)
 $\frac{1.5}{1.5}$
 kept $f(x)/y$ (+, -)