Test 1 Review

Tuesday, September 18, 2018 11:52 AM

#1 Plug the point into the equation

$4x - 3y = 28$

$x = 4$, $y = 4$

$4 \cdot 4 - 3 \cdot 4 \stackrel{?}{=} 28$

$4 \neq 28$

Ans: NO

#2 $f(2) = 4 \cdot (2)^2 + 5 \cdot (2) - 5$

$= \boxed{21}$

#3 Domain = Projection of graph on x-axis

$= \boxed{[-4, 4]}$

#4 $f(x) = \frac{7}{2-x}$. Find domain.

To find domain; set denominator = 0 and solve for x.

$2 - x = 0 \rightarrow x = 2$.

Conclusion: Domain = All real #s except for 2

$= (-\infty, 2) \cup (2, \infty)$

or $= \boxed{\{x \mid x \neq 2\}}$ → choice B.

#5 $\left(\frac{f}{g}\right)(3) = \frac{f(3)}{g(3)}$

From the graph, $f(3) = 1$; $g(3) = -1$.

So, $\frac{f(3)}{g(3)} = \frac{1}{-1} = \boxed{-1}$

#6 $(f \cdot g)(x) = f(x) \cdot g(x)$

$= (5x - 6)(6x - 9)$

$= 30x^2 - 45x - 36x + 54$

$= \boxed{30x^2 - 81x + 54}$

#7 $(7, -13)$ and $(2, -17)$

$$\text{Slope} = \frac{(-17) - (-13)}{2 - 7} = \frac{-17 + 13}{-5} = \frac{-4}{-5} = \boxed{\frac{4}{5}}$$

#8 1st way: $(0, 20000)$; $(5, 10000)$ → ordered pairs on graph

$$\text{Slope} = \frac{10000 - 20000}{5 - 0} = \boxed{-2000}$$

2nd way: $\text{Slope} = \frac{\text{Rise}}{\text{Run}} = \frac{-10000}{5} = \boxed{-2000}$

#9 Step 1: $\text{Slope} = \frac{8-0}{-9-(-6)} = \frac{8}{-9+6} = \frac{8}{-3} = -\frac{8}{3}$

Step 2: Point-Slope Form: (Choose $(-6,0)$)

$$y = -\frac{8}{3}(x-(-6))$$

$$y = -\frac{8}{3}(x+6)$$

$$y = -\frac{8}{3}x - \frac{48}{3}$$

$$\boxed{y = -\frac{8}{3}x - 16}$$

#10 $-9x - 2y = 39 \rightarrow -2y = 9x + 39$

$\rightarrow y = -\frac{9}{2}x - \frac{39}{2} \rightarrow \text{Slope} = -\frac{9}{2}$.

Slope of the line parallel to this $= -\frac{9}{2}$

Point-Slope form: $y-(-2)=-\frac{9}{2}(x-(-3))$

$$y+2=-\frac{9}{2}(x+3)$$

$$y=-\frac{9}{2}x-\frac{27}{2}-2$$

$$\boxed{y=-\frac{9}{2}x-\frac{31}{2}}$$

#11 $3x-2y=-1 \longrightarrow -2y=-3x-1 \rightarrow y=\boxed{\frac{3}{2}}x+\frac{1}{2}$

$2x+3y=-1 \longrightarrow 3y=-2x-1 \rightarrow y=\boxed{-\frac{2}{3}}x-\frac{1}{3}$

Slope of 1st line $=\frac{3}{2}$

Slope of 2nd line $=-\frac{2}{3}$.

} They are perpendicular.

#12 2 data points

x	y	
1.35	4820	→ (1.35, 4820)
1.40	3961	→ (1.40, 3961)

Linear function $y = mx + b$ that fits the points.

Step 1: Find Slope $= \frac{3961 - 4820}{1.40 - 1.35} = \frac{-859}{0.05}$

$= -17180$

Step 2: Point-Slope Form:

$y - 4820 = -17180(x - 1.35)$

Step 3: Slope-Intercept Form

$y = -17180x + 23193 + 4820$

$$\boxed{y = -1718x + 28013}$$

At the price $x = \$1.23$;

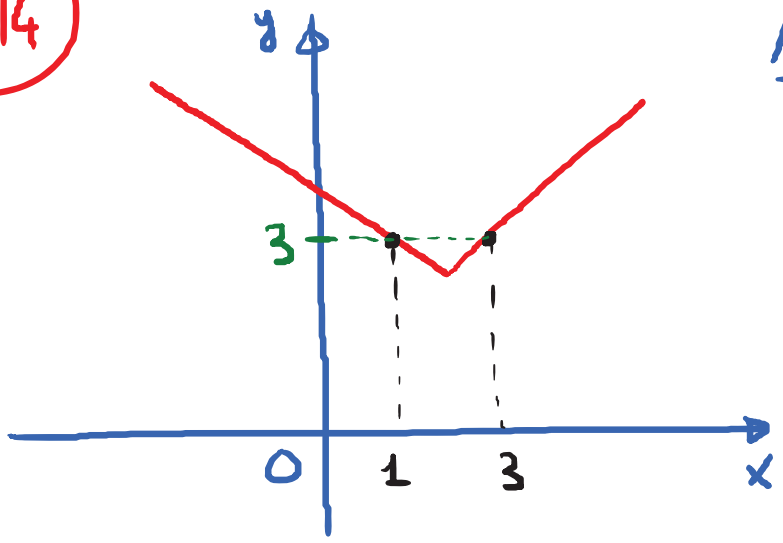
$$y = -17180(1.23) + 28013$$

$$\boxed{y = 6881.6}$$

#13 $P(33) = 1 + \frac{33}{33} = \boxed{2}$ (atm)

pressure at the depth of 33 ft

#14



Answer: $x = 1$; $x = 3$

#15 $f(x) = \frac{2}{x-12}$; $g(x) = 7x - 5$.

Step 1: Find D_f

$$D_f = (-\infty, 12) \cup (12, \infty)$$

Step 2: Find D_g

$$D_g = (-\infty, \infty)$$

Step 3: Find $D_f \cap D_g$

$$D_f \cap D_g = (-\infty, 12) \cup (12, \infty)$$

exclude

Step 4: $g(x) = 0 \leftrightarrow 7x - 5 = 0 \leftrightarrow \boxed{x = \frac{5}{7}}$.

Step 5: Domain of $\frac{f}{g}$:

Interval: $(-\infty, \frac{5}{7}) \cup (\frac{5}{7}, 12) \cup (12, \infty)$.

Set builder: $\{ x \mid x \neq 12, x \neq \frac{5}{7} \}$

#16 $6x - 8y = 8 \rightarrow -8y = -6x + 8$

$\rightarrow y = -\frac{6}{-8}x + \frac{8}{-8} = \frac{3}{4}x - 1$

$\rightarrow$ Slope $= \frac{3}{4}$; y-intercept: $(0, -1)$

#17 $y = -\frac{8}{5}x + \frac{39}{5}$

#18 $7x - 8y = -30 \rightarrow -8y = -7x - 30$

$\rightarrow y = \frac{7}{8}x + \frac{15}{4} \rightarrow$ Slope $= \frac{7}{8}$.

Slope of line we want to find $= -\frac{8}{7}$ b/c it is perpendicular to this.

Point-Slope Form: $y + 9 = -\frac{8}{7}(x - 6)$

$y = -\frac{8}{7}x + \frac{48}{7} - 9$

$\boxed{y = -\frac{8}{7}x - \frac{15}{7}}$

#19 $f(x) = 6x^2 + 3x$

$$f(2a) = 6 \cdot (2a)^2 + 3(2a)$$

$$= 6 \cdot 4a^2 + 6a$$

$$\boxed{f(2a) = 24a^2 + 6a}$$

#20 Point-Slope Form:

$$y - (-4) = -\frac{4}{5}(x - 7)$$

$$y + 4 = -\frac{4}{5}x + \frac{28}{5}$$

$$y = -\frac{4}{5}x + \frac{28}{5} - 4$$

$$\boxed{y = -\frac{4}{5}x + \frac{8}{5}}$$