Chapter 1
Pre-Calculus Practice Test

Name Key
Per ____ Date ____

1. Write an equation in slope-intercept form for a line that passes through the point A(5, 2) and has a slope of $\frac{-3}{2}$.

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

$y - 2 = \frac{-3}{2}(x - 5)$

$y - 2 = -\frac{3}{2}x + \frac{15}{2}$

$+\frac{4}{2} \qquad +\frac{4}{2}$

$y = -\frac{3}{2}x + \frac{19}{2}$

2. Write the point-slope form of the equation of the line that passes through A (5, -3) and is parallel to the line $2x - 3y + 12 = 0$.

Slope $= -\frac{A}{B} = \frac{2}{3}$

$y + 3 = \frac{2}{3}(x + 5)$

3. Write the standard form of the equation that passes through B(4, -3) and is perpendicular to the graph of $3x + 6 = 0$.

4. A pizza place is tracking its coupon use for 6 weeks.

a) Use the points (2, 26) and (5, 62) to write a linear equation to predict their total coupon use. $m = \frac{36}{3} = 12$ $y - 26 = 12(x - 2)$ $\Rightarrow$ $y = 12x + 2$

b) How many coupons would be used by the 10th week?

Week	1	2	3	4	5	6
Number Total Number of Coupons used to date	12	26	34	49	62	75

$y(10) = 12(10) + 2 = 122$ coupons

5. If $f(x) = \sqrt{x-1}$ and g(x) = 3x + 4, find f(g(3)).

$g(3) = 3(3) + 4 = 9 + 4 = 13$

$f(g(3)) = f(13) = \sqrt{13 - 1} = \sqrt{12} = \sqrt{4}\sqrt{3}$

$2\sqrt{3}$

$2\sqrt{3}$

6. State the domain and range of the relation {(-3, 4), (-2, 5), (-5, 4), (-3, 5)}. Then state whether the relation is a function and state the reasons.

Domain: $-3, -2, -5$

Range: $4, 5$

Not a function b/c when $x = -3$, $y = 4$ or $y = 5$

7. If $f(x) = 3x^2 + 7$ find f(n – 2)

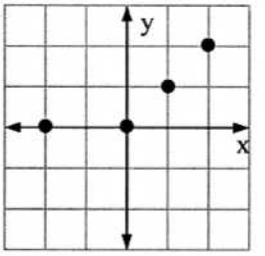
$f(n-2) = 3(n-2)^2 + 7$

$= 3(n^2 - 4n + 4) + 7$

$= 3n^2 - 12n + 12 + 7 =$

$3n^2 - 12n + 19$

8. State the relation shown in the graph as a set of ordered pairs. Then state whether the relation is a function and state the reason.



$(-2,0), (0,0) (1,1) (2,2)$

Function b/c it passes the vertical line test

For problems 9 and 10 Given $f(x) = x^2 - 4$ **and** , $g(x) = x+2$ **find each function.**

9. $\frac{f(x)}{g(x)} = \frac{x^2-4}{x+2} = \frac{(x+2)(x-2)}{x+2} = \boxed{x-2}$

10. $f(g(x)) = f(x+2) = (x+2)^2 - 4 = x^2+4x+4-4 = \boxed{x^2+4x}$

11. Find the zero of $f(x) = \frac{-3}{4}x - 12$

$0 = -\frac{3}{4}x - 12$ $\left(\frac{4}{3}\right)$ $x = -16$

12. ***Retail:*** The cost of a gasoline in 2003 was \$1.90 and \$3.00 in 2005. Find the slope of the line through the points at (2003, 1.90) and (2005, 3.00). What does this slope represent?

Slope $= \frac{1.10}{2} = \boxed{0.55}$ This slope represents the average change in price per year.

13. Write an equation for a line that goes through the point (5, 3) and has a y-intercept of 3.

y-int $(0,3)$ $(5,3)$

goes through $y=3$ both times so $\boxed{y=3}$

14. Determine whether the graphs of $2x - 3y - 5 = 0$ and $y = \frac{2}{3}x + 4$ are parallel, coinciding, perpendicular, or none of these.

$\text{Slope} = -\frac{A}{B} = \frac{2}{3}$

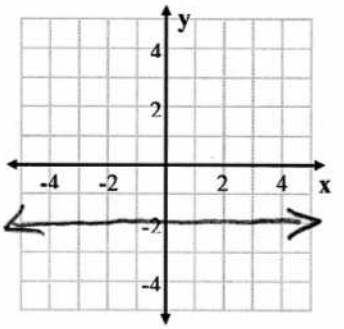
$y\text{-int} = \frac{5}{3}$

parallel

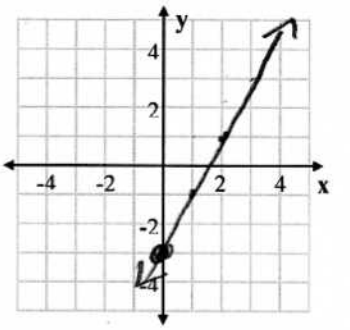
15. Graph each function or relation

a) $y + 2 = 0$

$y = -2$



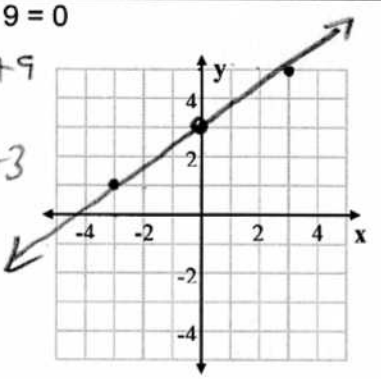
b) $y = 2x - 3$



c) $2x - 3y + 9 = 0$

$3y = 2x + 9$

$y = \frac{2}{3}x + 3$

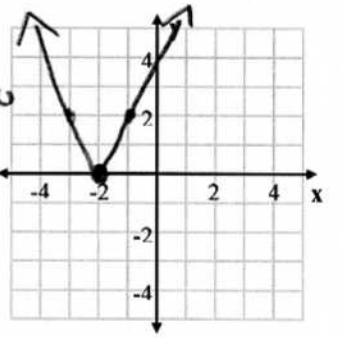


d) $f(x) = |2x+4|$

vertex when $2x+4=0$

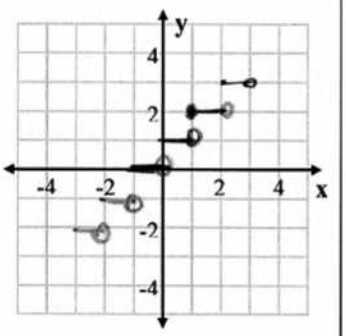
$x = -2$

x	y
-2	0
-1	2
-3	2



e) $f(x) = [[x + 1]]$

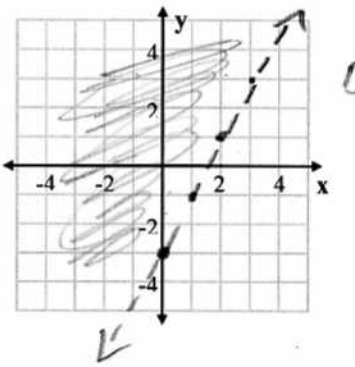
SKIP



f) $2x - 3 > y$

$y < 2x - 3$

Dashed



g) $y \leq -2|x| + 1$

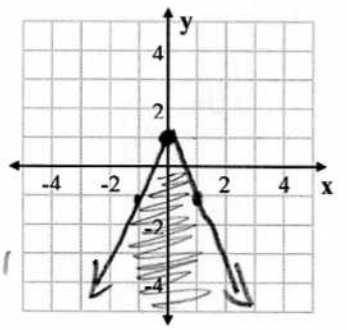
vertex at $x = 0$

x	y
0	1
-1	-1
1	-1

test (0, 0)

$0 \leq -2(0) + 1$

True



h) $f(x) = \begin{cases} 4 \text{ if } x < -3 \\ x - 3 \text{ if } -3 \leq x < 2 \\ -2x \text{ if } x \geq 2 \end{cases}$

$y = x - 3$

x	$x-3$
-3	-6
2	

x	$y = -2x$
2	-4
3	-6