College Review Math
Review Wk. 1A to 1C

Name KEY

Find the length and midpoint of $\overline{AB}$.

1) A(1, -6) & B(-4, 1)

$d = \sqrt{(-4-1)^2 + (1--6)^2}$

$d = \sqrt{(-5)^2 + (7)^2}$

$d = \sqrt{25+49} = \sqrt{74}$

D = $\sqrt{74}$

MP = (−1.5,−2.5)

$mp = \left(\frac{1-4}{2}, \frac{-6+1}{2}\right) = \left(-\frac{3}{2}, -\frac{5}{2}\right)$

2) A(0, 5) & B(-3, -7)

$d = \sqrt{(-3-0)^2 + (-7-5)^2}$

$d = \sqrt{(-3)^2 + (-12)^2}$

$d = \sqrt{9+144} = \sqrt{153}$

$d = \sqrt{9}\sqrt{17} = 3\sqrt{17}$

D = $3\sqrt{17}$

MP = (−1.5,−1)

$mp = \left(\frac{0-3}{2}, \frac{5-7}{2}\right) = \left(-\frac{3}{2}, -1\right)$

Determine the x-intercept and y-intercept for each equation.

3) $2x + 5y = 12$

x-int = (6, 0)

y-int = (0, 2.4)

$2x + 5(0) = 12$
$2x = 12$
$x = 6$

$2(0) + 5y = 12$
$5y = 12$
$y = 12/5$

4) $\frac{1}{2}y - 3 = x$

x-int = (-3, 0)

y-int = (0, 6)

$1/2(0) - 3 = x$
$-3 = x$

$1/2y - 3 = 0$
$1/2y = 3$
$y = 6$

Determine the point of intersection for each pair (system) of equations. Do not use the graphing calculator.

5) $2x + y = -16$
$x + 3y = 1$ → substitution: $x = 1 - 3y$

$2(1 - 3y) + y = -16$
$2 - 6y + y = -16$
$-5y = -18$
$y = 18/5$

$x + 3(18/5) = 1$
$x + 54/5 = 1$
$x = -49/5$

(-9.8, 3.6)

6) (2) $3x - 5y = 1$
(3) $-2x + 4y = 4$ → elimination:

$6x - 10y = 2$
$-6x + 12y = 12$
$2y = 14$
$y = 7$

$-2x + 4(7) = 4$
$-2x + 28 = 4$
$-2x = -24$
$x = 12$

(12, 7)

Find the slope of the line containing the points given.

7) A(1, 9) & B(5, 21)

$m = \frac{21-9}{5-1} = \frac{12}{4} = 3$

8) X(-3, 4) & Y(3, 4)

$m = \frac{4-4}{3--3} = \frac{0}{6} = 0$

Find the slope and y-intercept for the following equations.

9) $6y = 3x + 42$

$y = \frac{3x}{6} + \frac{42}{6}$

$y = \frac{1}{2}x + 7$

m = 1/2

b = 7

10) $x - 2y = 7$

$-2y = -x + 7$

$y = \frac{x}{2} - \frac{7}{2}$

m = 1/2

b = -7/2

Determine if the following lines are parallel, perpendicular or neither. (must show proof)

11) line A: $y = \frac{5}{3}x - 4$

line B: $6x - 10y = 12$

$-10y = -6x + 12$

$y = \frac{-6x}{-10} + \frac{12}{-10}$

$y = \frac{3}{5}x - \frac{6}{5}$

Neither

12) line C: passes thru (6, 4) & (-2, 6)

line D: passes thru (0, -6) & (1, -2)

$m_C = \frac{6-4}{-2-6} = \frac{2}{-8} = -\frac{1}{4}$

$m_D = \frac{-2--6}{1-0} = \frac{4}{1} = 4$

Perpendicular

Write an equation in slope-intercept form for each line described.

13) has y-int. = 2, and passes thru (1, -1)

$y = mx + 2$
$-1 = m(1) + 2$
$-1 = m + 2$
$-3 = m$

$y = -3x + 2$

14) has x-int = 4, and slope = 0.5

$y = 0.5x + b$
$0 = 0.5(4) + b$
$0 = 2 + b$
$-2 = b$

$y = \frac{1}{2}x - 2$

15) passes thru (-1, 7) & (2, 1)

$m = \frac{1-7}{2--1} = \frac{-6}{3} = -2$

$y = -2x + b$
$1 = -2(2) + b$
$1 = -4 + b$
$5 = b$

$y = -2x + 5$

16) passes thru (6, -4) and is parallel to the line with equation: $3y - x = 3$

$3y = x + 3$
$y = 1/3x + 1$

$y = 1/3x + b$
$4 = 1/3(6) + b$
$-4 = 2 + b$
$-6 = b$

$y = \frac{1}{3}x - 6$

17) Prove what type of quadrilateral forms when the following points are connected: A(-1, 6), B(2, 5), C(1, 2), D(-2, 3) Do not graph.

SQUARE: methods will vary.

18) Determine which of the following points lie on the line with equation: $6 - \frac{1}{2}y = 2x$

a) (8, 1)

$6 - 1/2(1) = 2(8)$
$6 - 1/2 = 16$
$5.5 = 16$, no

b) (4.5, -6)

$6 - 1/2(-6) = 2(4.5)$
$6 - (-3) = 9$
$9 = 9$, yes

c) (8, 20)

$6 - 1/2(20) = 2(8)$
$6 - 10 = 16$
$-4 = 16$, no

d) $\left(2 - \frac{1}{4}a, a + 4\right)$

$6 - 1/2(a + 4) = 2(2 - 1/4a)$
$6 - 1/2a - 2 = 4 - 1/2a$
$4 - 1/2a = 4 - 1/2a$, yes