College Math

Name KEY

Parallel & Perpendicular - NOTES

Date _____

1) Parallel lines have THE SAME SLOPES

Find the slope of a line parallel to each given line.

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

$-\frac{1}{4}$

3) $y = \frac{9}{4}x + 4$

$\frac{9}{4}$

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

$\frac{1}{4}$

5) $2x + y = -1$

$-\frac{2}{1}$

6) $5x - y = 0$

$\frac{5}{1}$

7) $4x + 3y = -3$

$-\frac{4}{3}$

8) $y - 4 = -(x + 7)$

-1

9) $y - 6 = \frac{2}{3}(x - 1)$

$\frac{2}{3}$

10) $y + 3 = \frac{1}{5}(x - 4)$ $\frac{1}{5}$

Write the slope-intercept form of the equation of the line described.

11) through: $(-4, 3)$, parallel to $y = \frac{1}{2}x + 1$

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

$3 = \frac{1}{2}(-4) + b$

$3 = -2 + b$

$5 = b$

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

12) through: $(3, -1)$, parallel to $y = -\frac{4}{3}x + 2$

$y = -\frac{4}{3}x + b$

$-1 = -\frac{4}{3}(3) + b$

$-1 = -4 + b$

$3 = b$

$y = -\frac{4}{3}x + 3$

Write the standard form of the equation of the line described.

13) through: $(1, 5)$, parallel to $5x - y = 7$

$5x - y = C$

$5(1) - 5 = C$

$5 - 5 = 0$

$5x - y = 0$

14) through: $(5, -1)$, parallel to $4x + 5y = 13$

$4x + 5y = C$

$4(5) + 5(-1) = C$

$20 + -5 = C$

$-15 = C$

$4x + 5y = -15$

Write the point-slope form of the equation of the line described.

15) through: $(4, -1)$, parallel to $y + 7 = -\frac{1}{2}(x - 3)$

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

16) through: $(3, 3)$, parallel to $y - 8 = -\frac{2}{3}(x + 1)$

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

Write the slope-intercept form of the equation of the line described.

27) through: $(1, -5)$, perp. to $y = \frac{1}{10}x - 5$

x y

★ NEW SLOPE = −10

$y = -10x + b$

$-5 = -10(1) + b$

$-5 = -10 + b$

$5 = b$

$y = -10x + 5$

28) through: $(-2, 5)$, perp. to $y = \frac{1}{5}x + 5$

★ NEW SLOPE = −5

$y = -5x + b$

$5 = -5(-2) + b$

$5 = 10 + b$

$-5 = b$

$y = -5x - 5$

Write the standard form of the equation of the line described.

29) through: $(4, -4)$, perp. to $2x - 3y = 9$

x y SLOPE = 2/3

★ NEW SLOPE = −3/2

$3x + 2y = C$

$3(4) + 2(-4) = C$

$12 + -8 = C$

$4 = C$

$3x + 2y = 4$

30) through: $(3, 5)$, perp. to $x + 2y = 12$

x y SLOPE = −1/2

★ NEW SLOPE = 2/1 = 2

$2x - 1y = C$

$2(3) - 1(5) = C$

$6 - 5 = C$

$1 = C$

$2x - 1y = 1$

Write the point-slope form of the equation of the line described.

31) through: $(5, -1)$, perp. to $y + 9 = \frac{1}{3}(x - 10)$

x y

★ NEW SLOPE = −3

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

32) through: $(5, -5)$, perp. to $y + 6 = \frac{5}{7}(x - 3)$

x y

★ NEW SLOPE = −7/5

$y + 5 = -7/5(x - 5)$

17) Perpendicular Lines have OPPOSITE SLOPES

* FRACTION IS FLIPPED
* SIGN IS SWITCHED

Find the slope of a line perpendicular to each given line.

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

$-\frac{2}{3}$

19) $y = 9x + 4$

$-\frac{1}{9}$

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

$\frac{3}{1} = 3$

21) $2x - y = -1$ → SLOPE = $\frac{2}{1}$

$-\frac{1}{2}$

22) $x + 3y = 9$ → SLOPE = $-\frac{1}{3}$

$\frac{3}{1} = 3$

23) $2x - 5y = -15$ → SLOPE = $\frac{2}{5}$

$-\frac{5}{2}$

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

$\frac{3}{1} = 3$

25) $y - 9 = \frac{4}{3}(x - 6)$

$-\frac{3}{4}$

26) $y + 2 = \frac{7}{5}(x + 5)$ $-\frac{5}{7}$