

Linear Functions

Formula : Slope $m = \frac{y_2 - y_1}{x_2 - x_1}$, Midpoint $M\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$,

Distance $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$, Slope of parallel lines $m_1 = m_2$

Slope of perpendicular lines $m_1 \cdot m_2 = -1$ (negative reciprocals)

1. Determine the slope, midpoint and the distance between the given points

- a) (-3, 6) and (2, -7) b) (-4, -7) and (8, 4)
c) (4, -7) and (8, -12) d) (13, 17) and (-9, 5)

2. Determine the slope and y-intercept for each of the following:

- a) $5x - 7y = 12$ b) $-8x + 4y = -9$
c) $-2x + 5y = 11$ d) $4x - 7y = 13$

3. Determine the slope of the line parallel to and perpendicular to:

- a) a line with slope of $2/3$
b) a line with slope of $-5/7$
c) a line passing through (2, 6) and (-7, 2)
d) a line with equation $7x - 3t = 12$

4. Determine the equation of the line given :

- a) $m = -3, b = -4$ f) $m = -3/5, b = 7$
b) $m = -4/7, b = 3/5$ g) $m = -3, (0, -7)$
c) $m = 3/4, (0, 5)$ h) $m = -3, (-3, 5)$
d) $m = -2/5, (4, -5)$ i) $(-4, -7), (-2, 6)$
e) $(-6, 4), (7, -2)$
- j) through (-6, 3) and parallel to the equation $6x - 5y = 2$
k) through (-2, -5) and perpendicular to the equation $-4x + 3y = 2$
l) through (-3, 3) and parallel to the line defined by points (2, 6) and (-5, 11)
m) through (-7, 2) and perpendicular to the line defined by the points (7, 4) and (-3, 6)
n) perpendicular bisector of the line segment defined by the points (-7, 4) and (3, -8)