

[12-02-13-T]

Linear function in standard form - with answers.

■ All answers must be in standard form: $ax + by = c$, where a, b, c are integers.

[1] Find the equation of the line through $P(3, 5)$ that is perpendicular to the line $y = -3x - 4$.

[2] Find the equation of the line through $P(-3, 5)$ that is parallel to the line $y = 2x - \frac{1}{291}$.

[3] Find the equation of the line through $P(1, -3)$ that is perpendicular to the line $4x + y = 3$.

[4] Find the equation of the line through $P(11, 3)$ that is parallel to the line $x - 2y = 3$.

[5] Find the equation of the line through $P(13, 2)$ that is perpendicular to the line $-3x - 4y = 5$.

[6] Find the equation of the line through $P(\frac{1}{2}, 3)$ that is perpendicular to the line $-2x - y = 5$.

Answers

$$[1] \quad y - 5 = \frac{1}{3}(x - 3) \iff 3y - 15 = x - 3 \iff -x + 3y = 12 \iff x - 3y = -12.$$

$$[2] \quad y - 5 = 2(x + 3) \iff y - 5 = 2x + 6 \iff -2x + y = 11 \iff 2x - y = -11.$$

$$[3] \quad y + 3 = \frac{1}{4}(x - 1) \iff 4y + 12 = x - 1 \iff -x + 4y = -13 \iff x - 4y = 13.$$

$$[4] \quad y - 3 = \frac{1}{2}(x - 11) \iff 2y - 6 = x - 11 \iff -x + 2y = -5 \iff x - 2y = 5.$$

$$[5] \quad y - 2 = \frac{4}{3}(x - 13) \iff 3y - 6 = 4x - 52 \iff 4x - 3y = 46.$$

$$[6] \quad y - 3 = \frac{1}{2}\left(x - \frac{1}{2}\right) \iff 2y - 6 = x - \frac{1}{2} \iff 4y - 12 = 2x - 1 \iff 2x - 4y = -11.$$