

Determine whether the graphs of each pair of lines are parallel, perpendicular, or none of these.

12. $y = 5x - 18$

$2x + 10y + 10 = 0$

15. $y = -3$

$x = 6$

18. $y = 3x - 2$

$3x + y = 2$

13. $y - 7x + 5 = 0$

$y - 7x - 9 = 0$

16. $y = 4x - 3$

$4.8x - 1.2y = 3.6$

19. $5x + 9y = 14$

$y = -\frac{5}{9}x + \frac{14}{9}$

14. $y = \frac{1}{3}x + 11$

$y = 3x - 9$

17. $4x - 6y = 11$

$3x + 2y = 9$

20. $y + 4x - 2 =$

$y + 4x + 1 =$

21. Are the graphs of $y = 3x - 2$ and $y = -3x + 2$ parallel, coinciding, perpendicular, or none of these? Explain.

Write the standard form of the equation of the line that is parallel to the graph of the given equation and passes through the point with the given coordinates.

22. $y = 2x + 10$; $(0, -8)$

23. $4x - 9y = -23$; $(12, -15)$

24. $y = -9$; $(4, -)$

Write the standard form of the equation of the line that is perpendicular to the graph of the given equation and passes through the point with the given coordinates.

25. $y = 5x + 12$; $(0, -3)$

26. $6x - y = 3$; $(7, -2)$

27. $x = 12$; $(6, -1)$

28. The equation of line ℓ is $5y - 4x = 10$. Write the standard form of the equation of the line that fits each description.

a. parallel to ℓ and passes through the point at $(-15, -)$

b. perpendicular to ℓ and passes through the point at $(-15, -)$