

Changing Forms of Quadratics

Convert each function to standard form. Give the vertex and y-intercept. Graph. Check your work on the calc.

15) $y = (x+4)^2 - 5$
 $(x+4)(x+4) - 5$
 $x^2 + 4x + 4x + 16 - 5$
 $y = x^2 + 8x + 11$
 vertex: $(-4, -5)$
 y-int: 11

16) $f(x) = (x-2)^2 + 3$
 $(x-2)(x-2) + 3$
 $x^2 - 2x - 2x + 4 + 3$
 $f(x) = x^2 - 4x + 7$
 vertex: $(2, 3)$
 y-int: 7

17) $y = (x-1)^2 + 4$
 $(x-1)(x-1) + 4$
 $x^2 - x - x + 1 + 4$
 $y = x^2 - 2x + 5$
 vertex: $(1, 4)$
 y-int: 5

18) $f(x) = (x+3)^2 - 1$
 $(x+3)(x+3) - 1$
 $x^2 + 3x + 3x + 9 - 1$
 $f(x) = x^2 + 6x + 8$
 vertex: $(-3, -1)$
 y-int: 8

Convert each function to factored form. Give the x and y intercepts. Graph. Show the line of symmetry.

19) $y = x^2 - 4x - 5$
 $p \cdot q = -5$
 $p + q = -4$
 $-5 + 1$
 $y = (x-5)(x+1)$
 x-int: 5 and -1
 y-int: -5

20) $y = x^2 + 6x$
 $y = x(x+6)$
 x-int: 0 and -6
 y-int: 0

21) $f(x) = x^2 + 2x - 8$
 $p \cdot q = -8$
 $p + q = 2$
 $4 - 2$
 $f(x) = (x+4)(x-2)$
 x-int: -4 and 2
 y-int: -8

22) $y = x^2 - 6x - 7$
 $p \cdot q = -7$
 $p + q = -6$
 $-7 + 1$
 $y = (x-7)(x+1)$
 x-int: 7 and -1
 y-int: -7

Convert each function to standard form. Give the x and y intercepts. Graph. Show the line of symmetry.

23) $f(x) = (x+2)(x-3)$
 $x^2 - 3x + 2x - 6$
 $f(x) = x^2 - x - 6$
 x-int: -2 and 3
 y-int: -6

24) $f(x) = (x-4)(x-2)$
 $x^2 - 2x - 4x + 8$
 $f(x) = x^2 - 6x + 8$
 x-int: 4 and 2
 y-int: 8

25) $y = (x+5)(x-1)$
 $x^2 - x + 5x - 5$
 $y = x^2 + 4x - 5$
 x-int: -5 and 1
 y-int: -5

26) $f(x) = (x+3)(x+4)$
 $x^2 + 4x + 3x + 12$
 $f(x) = x^2 + 7x + 12$
 x-int: -3 and -4
 y-int: 12

Convert each function to vertex form. Give the vertex and y intercept. Graph. Check your work on the calc.

35) $y = x^2 + 6x + 8$
 $\frac{-b}{2a} = \frac{-6}{2(1)} = \frac{-6}{2} = -3$
 $(-3)^2 + 6(-3) + 8$
 $9 - 18 + 8 = -1$
 vertex: $(-3, -1)$
 $y = (x+3)^2 - 1$
 y-int: 8

36) $y = x^2 + 10x + 21$
 $\frac{-b}{2a} = \frac{-10}{2(1)} = \frac{-10}{2} = -5$
 $(-5)^2 + 10(-5) + 21$
 $25 - 50 + 21 = -4$
 vertex: $(-5, -4)$
 $y = (x+5)^2 - 4$
 y-int: 21

37) $y = x^2 + 2x$
 $\frac{-b}{2a} = \frac{-2}{2(1)} = \frac{-2}{2} = -1$
 $(-1)^2 + 2(-1)$
 $1 - 2 = -1$
 vertex: $(-1, -1)$
 $y = (x+1)^2 - 1$
 y-int: 0

38) $f(x) = x^2 + 8x + 7$
 $\frac{-b}{2a} = \frac{-8}{2(1)} = \frac{-8}{2} = -4$
 $(-4)^2 + 8(-4) + 7$
 $16 - 32 + 7 = -9$
 vertex: $(-4, -9)$
 $f(x) = (x+4)^2 - 9$
 y-int: 7