

Review of Essential Skills—Part 2

Using Properties of Relations to Sketch Their Graphs, page 211

- straight line through $(0, -2)$ and $(3, 0)$; $x = 3, y = -2$
 - straight line through $(0, 5)$ and $(-3, 0)$; $x = -3, y = 5$
 - straight line through $(-8, 0)$ and $(0, 3)$; $x = -8, y = 3$
 - straight line through $(0, -12)$ and $(8, 0)$; $x = 18, y = -12$
- straight line through $(0, 7)$ and $(\frac{7}{3}, 0)$; $m = -3, b = 7$
 - straight line through $(-2\frac{2}{3}, 0)$ and $(0, -2)$; $m = -\frac{3}{4}, b = -2$
 - straight line through $(0, 2)$ and $(3, 0)$; $m = -\frac{2}{3}, b = 2$
 - straight line through $(0.5, 0)$ and $(0, 1.5)$; $m = 9, b = \frac{3}{2}$
- parabola opening up, vertex $(1.5, 0.5)$ through $(1, 1)$ and $(3, 1)$
 - parabola opening down, vertex $(1.5, 4.75)$ through $(1, 4)$ and $(2, 4)$
 - parabola opening up, vertex $(-0.5, 4.25)$ through $(-1, -3)$ and $(0, -3)$
 - parabola opening down, vertex $(1, 5)$ through $(0, 3)$ and $(2, 3)$
- parabola opening up, vertex $(-2, -16)$ through $(-6, 0)$ and $(2, 0)$
 - parabola opening up, vertex $(3.5, 2.25)$ through $(2, 0)$ and $(5, 0)$
 - parabola opening up, vertex $(1.25, -6\frac{1}{8})$ through $(-0.5, 0)$ and $(3, 0)$
 - parabola opening up, vertex $(\frac{13}{12}, -\frac{289}{24})$ through $(-\frac{1}{3}, 0)$ and $(2.5, 0)$
- parabola opening up, vertex $(2, 3)$ through $(1, 4)$ and $(3, 4)$
 - parabola opening up, vertex $(-4, -10)$ through $(-7, -1)$ and $(-1, -1)$
 - parabola opening up, vertex $(1, 3)$ through $(0, 5)$ and $(2, 5)$
 - parabola opening down, vertex $(-1, -4)$ and $(-2, -7)$ and $(0, -7)$
- 27.45 m
- $\frac{525}{12}$ million dollars

Completing the Square to Convert to the Vertex Form of a Parabola, page 212

- $(x + 1)^2$
 - $(x + 2)^2$
 - $(x + 3)^2$
 - $(x + 5)^2$
 - $(x - 6)^2$
 - $(x - 7)^2$
 - $(x - 9)^2$
 - $(x - 10)^2$
- $y = (x + 1)^2$
 - $y = (x + 2)^2 + 2$
 - $y = (x - 6)^2 + 4$
 - $y = (x - 9)^2 - 1$
- $y = 2(x - 1)^2 + 5$
 - $y = 5(x + 1)^2 + 1$
 - $y = -3(x + 2)^2 + 14$
 - $y = -\frac{1}{2}\left(x - \frac{5}{4}\right)^2 + \frac{89}{32}$
 - $-0.1(x + 2.5)^2 + 1.025$
 - $y = -\frac{3}{4}\left(x - \frac{10}{3}\right)^2 + \frac{19}{3}$
- $x = 9$ or $x = 1$
 - $x = \frac{5}{3}$ or $x = -\frac{1}{3}$
 - $x = \frac{5}{2}$ or $x = -4$
- 6.10 m
 - 1.02 s
- 1977; 19 000

Solving Quadratic Equations: The Quadratic Formula, page 214

- two imaginary or non-real roots
 - two real roots
 - one real root
 - one real root
 - two real roots
 - two imaginary or non-real roots
- $x = \frac{1 \pm \sqrt{281}}{20}$
 - $m = \frac{-27 \pm \sqrt{471}}{30}$
 - $p = \frac{9}{7}, p = \frac{5}{4}$
 - $y = \frac{5}{6}, y = -\frac{6}{7}$
 - $x = \frac{8}{9}, x = \frac{4}{5}$
 - $x = -\frac{7}{6}, x = \frac{5}{3}$
- 0.49 s, 4.6 s
 - 5.18 s
- 2.9 m

Transformations of Quadratic Relations, page 216

- $(2, 7)$
 - $(-2, -1)$
 - $(-5, 1)$
 - $(7, 1)$
 - $(3, -3)$
 - $(2, 8)$
- $(-4, 9)$
 - $(3, -3)$
 - $(-2, 1)$
 - $(-5, -4)$
- $y = x^2 + 2$
 - $y = 3x^2$
 - $y = (x - 4)^2$
 - $y = -x^2 - 2$
- parabola opening up, vertex $(0, 3)$ through $(-1, 4)$ and $(1, 4)$
 - parabola opening up, vertex $(0, -4)$ through $(-2, 0)$ and $(2, 0)$
 - parabola opening up, vertex $(3, 0)$ through $(2, 1)$ and $(4, 1)$
 - parabola opening up, vertex $(-4, 0)$ through $(-5, 1)$ and $(-3, 1)$
 - parabola opening up, vertex $(0, 0)$ through $(-1, 2)$ and $(1, 2)$
 - parabola opening up, vertex $(-2, 2)$ and $(2, 2)$
- parabola opening up, vertex $(1, 3)$ through $(-2, 5)$ and $(2, 5)$
 - parabola opening down, vertex $(-1, 2)$ through $(-2, -1)$ and $(0, -1)$
 - parabola opening up, vertex $(2, -1)$ through $(0, 1)$ and $(4, 1)$
 - parabola opening down, vertex $(-2, -4)$ through $(-3, 4\frac{1}{3})$ and $(-1, -4\frac{1}{3})$