

Unit 4 Mixed Practice: Find the x-intercepts.

Use each method at least twice (factoring, completing the square, quadratic formula).

F 1. $y = 2x^2 - 15x + 28$

$$\frac{15 \pm \sqrt{225 - 4(2)(28)}}{4}$$

$$\sqrt{225 - 224}$$

$$\sqrt{1} = 1$$

$$\frac{15 \pm 1}{4}$$

$$4$$

$$\frac{7}{2} \text{ or } 3.5$$

QF 2. $y = x^2 - 9x + 11$

$$\frac{9 \pm \sqrt{81 - 4(1)(11)}}{2}$$

$$\sqrt{81 - 44}$$

$$\sqrt{37}$$

$$\frac{9 \pm \sqrt{37}}{2}$$

QF 3. $y = 6x^2 + 12x + 5$

$$\frac{-12 \pm \sqrt{144 - 4(6)(5)}}{12}$$

$$\sqrt{144 - 120}$$

$$\sqrt{24}$$

$$\uparrow 6$$

$$2\sqrt{6}$$

$$\frac{-12 \pm 2\sqrt{6}}{12}$$

$$\frac{-6 \pm \sqrt{6}}{6}$$

F 4. $y = 3x^2 + 18x + 15$

$$\frac{-18 \pm \sqrt{324 - 4(3)(15)}}{6}$$

$$\sqrt{324 - 180}$$

$$\sqrt{144}$$

$$12$$

$$\frac{-18 \pm 12}{6}$$

$$-1$$

$$-5$$

QF 5. $y = 2x^2 - 2x - 13$

$$\frac{2 \pm \sqrt{4 - 4(2)(-13)}}{4}$$

$$\sqrt{4 + 104}$$

$$\sqrt{108}$$

$$36 \cdot 3$$

$$6\sqrt{3}$$

$$\frac{2 \pm 6\sqrt{3}}{4}$$

$$\frac{1 \pm 3\sqrt{3}}{2}$$

CTS

6. $y = x^2 + 8x + 11$

$$\frac{-8 \pm \sqrt{64 - 4(1)(11)}}{2}$$

$$\sqrt{64 - 44}$$

$$\sqrt{20}$$

$$4 \cdot 5$$

$$2\sqrt{5}$$

$$\frac{-8 \pm 2\sqrt{5}}{2}$$

$$\frac{-4 \pm \sqrt{5}}{1}$$

$$-4 \pm \sqrt{5}$$

CTS 7. $y = x^2 - 14x + 21$

$$\frac{14 \pm \sqrt{196 - 4(1)(21)}}{2}$$

$$\begin{array}{l} \sqrt{196-84} \\ \sqrt{112} \\ 167 \\ 4\sqrt{7} \end{array}$$

$$\frac{14 \pm 4\sqrt{7}}{2}$$

$$\frac{7 \pm 2\sqrt{7}}{1}$$

$$\boxed{7 \pm 2\sqrt{7}}$$

Q 8. $y = 5x^2 + 7x + 1$

$$\frac{-7 \pm \sqrt{49 - 4(5)(1)}}{10}$$

$$\begin{array}{l} \sqrt{49-20} \\ \sqrt{29} \end{array}$$

$$\boxed{\frac{-7 \pm \sqrt{29}}{10}}$$

F 9. $y = x^2 + 3x - 108$

$$\frac{-3 \pm \sqrt{9 - 4(1)(-108)}}{2}$$

$$\begin{array}{l} \sqrt{9+432} \\ \sqrt{441} \\ 21 \end{array}$$

$$\frac{-3 \pm 21}{2}$$

$$\boxed{9} \quad \boxed{-12}$$

CTS 10. $y = x^2 + 12x + 18$

$$\frac{-12 \pm \sqrt{144 - 4(1)(18)}}{2}$$

$$\begin{array}{l} \sqrt{144-72} \\ \sqrt{72} \\ 36^2 \\ 6\sqrt{2} \end{array}$$

$$\frac{-12 \pm 6\sqrt{2}}{2}$$

$$\frac{-6 \pm 3\sqrt{2}}{1}$$

$$\boxed{-6 \pm 3\sqrt{2}}$$

Q 11. $y = 2x^2 - 6x + 3$

$$\frac{6 \pm \sqrt{36 - 4(2)(3)}}{4}$$

$$\begin{array}{l} \sqrt{36-24} \\ \sqrt{12} \\ 43 \\ 2\sqrt{3} \end{array}$$

$$\frac{6 \pm 2\sqrt{3}}{4}$$

$$\boxed{\frac{3 \pm \sqrt{3}}{2}}$$

Q 12. $y = 3x^2 - 8x - 12$

$$\frac{8 \pm \sqrt{64 - 4(3)(-12)}}{6}$$

$$\begin{array}{l} \sqrt{64+144} \\ \sqrt{208} \\ 16 \quad 13 \\ 4\sqrt{13} \end{array}$$

$$\frac{8 \pm 4\sqrt{13}}{6}$$

$$\boxed{\frac{4 \pm 2\sqrt{13}}{3}}$$