

P-28 Simplify each square root.

1. $\sqrt{18} = \sqrt{2} \sqrt{9} = 3\sqrt{2}$

4. $\sqrt{27} = \sqrt{9} \sqrt{3} = 3\sqrt{3}$

2. $\sqrt{32} = \sqrt{16} \sqrt{2} = 4\sqrt{2}$

5. $\sqrt{45} = \sqrt{9} \sqrt{5} = 3\sqrt{5}$

3. $\sqrt{50} = \sqrt{25} \sqrt{2} = 5\sqrt{2}$

6. $\sqrt{75} = \sqrt{25} \sqrt{3} = 5\sqrt{3}$

Find the intersection point(s) (if any) of each line and parabola. Make a sketch for each problem.

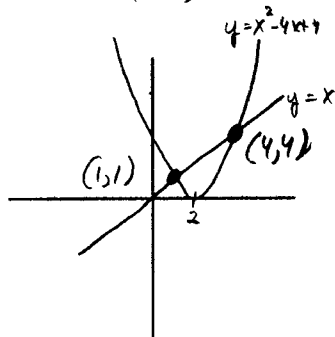
7. $y = x$ with $y = x^2 - 4x + 4 = (x-2)^2$ 9.

$$x = x^2 - 4x + 4$$

$$0 = x^2 - 5x + 4$$

$$0 = (x-4)(x-1)$$

$$\begin{aligned} \text{so } x &= 4 \text{ a } x = 1 \\ y &= 4 \quad y = 1 \end{aligned}$$



9. $y = -x - 1$ and $y = -x^2 + 2x + 3 = -(x-3)(x+1)$

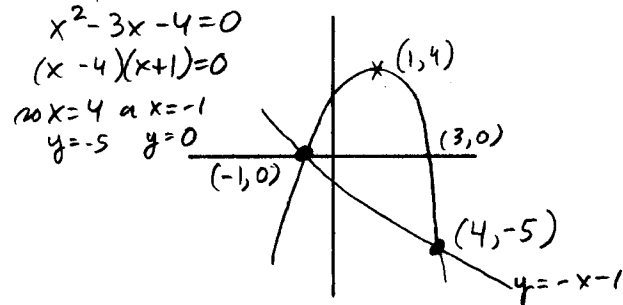
$$-x - 1 = -x^2 + 2x + 3$$

$$x^2 - 3x - 4 = 0$$

$$(x-4)(x+1) = 0$$

$$\text{so } x = 4 \text{ a } x = -1$$

$$y = -5 \quad y = 0$$



8. $y = 5$ and $y = x^2 - 4x + 4$

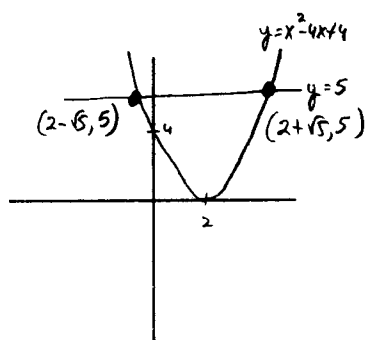
$$5 = x^2 - 4x + 4$$

$$5 = (x-2)^2$$

$$\text{so } x - 2 = \sqrt{5} \text{ a } x - 2 = -\sqrt{5}$$

$$x = 2 + \sqrt{5} \quad x = 2 - \sqrt{5}$$

$$y = 5 \quad y = 5$$



10.

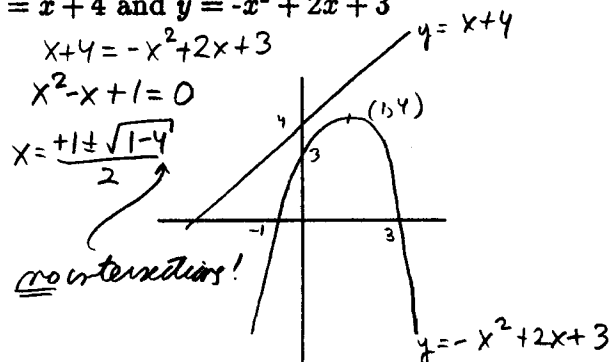
$y = x + 4$ and $y = -x^2 + 2x + 3$

$$x + 4 = -x^2 + 2x + 3$$

$$x^2 - x + 1 = 0$$

$$x = \frac{1 \pm \sqrt{1-4}}{2}$$

no intersections!



$$\begin{aligned} \text{check: } & (2 + \sqrt{5})^2 - 4(2 + \sqrt{5}) + 4 \\ & = 4 + 4\sqrt{5} + 5 - 8 - 4\sqrt{5} + 4 = 5 \checkmark \end{aligned}$$

$$\begin{aligned} & (2 - \sqrt{5})^2 - 4(2 - \sqrt{5}) + 4 \\ & = 4 - 4\sqrt{5} + 5 - 8 + 4\sqrt{5} + 4 = 5 \checkmark \end{aligned}$$