Completing the Square (1) Name:
Math III

Solve each quadratic equation by completing the square.

1. $x^2 + 10x - 1 = 0$

2. $-x^2 + 6x + 10 = 0$

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

4. $0.2x^2 + 0.4x + 0.8 = 0$

Rewrite each equation in vertex form.

5. $y = x^2 - 6x + 4$

6. $y = 3x^2 + 8x + 2$

Find the value of *k* that would make the left side of each equation a perfect square trinomial.

7. $x^2 + kx + 196 = 0$

8. $x^2 - kx + 16 = 0$

9. $\frac{1}{4}x^2 - kx + \frac{1}{25} + 0$

10. The quadratic function $d = -t^2 + 4t + 33$ models the depth of water in a flood channel after a rainstorm. The time in hours after it stops raining is *t* and *d* is the depth of the water in feet.

a. Solve the equation $-t^2 + 4t + 33 = 0$.
b. Approximate the positive solution found in part (a) to two decimal places.
c. What is a reasonable domain (all possible x values) for this function?
d. When does the maximum depth occur? What is the maximum depth?