Write your answers in the place provided. Passing is 4 of 5 answers completely correct. You may retake this test if needed. You may not use calculators, notes, books or the paper of another person on this assessment.

1. Solve the equation $(x - 2)(3 + 2x) = 0$ for x.

$x - 2 = 0 \rightarrow x = 2$

$3 + 2x = 0 \rightarrow x = -3/2$

Answer: $x = 2$ or $-3/2$

2. Solve the equation $d^2 - 4d = 0$ for d.   Factor $\rightarrow$ $d(d-4) = 0$

Answer: $d = 0$ or $d = 4$

3. Find the vertex of the parabola with equation $y = x^2 + 4x + 5$

①
$= x^2 + 4x + 4 + 1$
$= (x + 2)^2 + 1$
$\rightarrow$ vertex $-2, 1$

② x-coord of vertex $= -b/2a = \frac{-4}{2} = -2$

y coord $= (-2)^2 + 4(-2) + 5$

$= 4 + 5 - 8 = 1$

Answer: $(-2, 1)$

4. How many real roots does the equation $x^2 - 4x = -12$ have? (Hint: Discriminant).

③ $x^2 - 4x + 12 = 0$

$\rightarrow A = 1, B = -4 \quad C = 12.$

Discr $= B^2 - 4AC$

$= (-4)^2 - 4(1)(12) = 16 - 48 < 0$

Answer: None since discriminant is negative.

5. Find the equation of the parabola with graph as to the right:

Answer: $y = (x - 2)^2 + 3$

Vertex Form:

$y = a(x - h)^2 + k$

Vertex is $(2, 3) = (h, k)$

So $y = a(x - 2)^2 + 3$

To find a let $x = 0, y = 7$

$7 = a(0 - 2)^2 + 3$

$-3 \qquad\qquad 3$

$4 = a \cdot 4$

$1 = a$

7

(2,3)