Basic Algebra Test Questions:

1. $\sqrt[3]{-1} = -1$ True or False

2. $\sqrt{a^2} = a$ True or False

3. $\sqrt{a^2 + b^2} = a + b$ True or False

4. $\sqrt{3^{2x} + 2 + 3^{-2x}} = 3^x + 3^{-x}$ True or False

5. If $a \neq 0, b \neq 0, a + b \neq 0$, then

$$\frac{a+b}{\frac{1}{a} + \frac{1}{b}} = ab.$$

True or False

6. $|x|^3 = x^3$ True or False

7. If $x^2 - x - 6 > 0$, then

   A. $x > 3$ B. $-2 < x < 3$ C. $x < -2$ or $x > 3$ D. $x > 6$

8. The vertex of the parabola with equation $y = 5 + 6x - x^2$ is $(x, y) =$

   A. $(3, 14)$ B. $(0, 5)$ C. $(-3, -22)$ D. $(14, 3)$

9. The centre and radius of the circle with equation $x^2 + 2x + y^2 - 4y = 4$ are

   A. centre: $(x, y) = (-1, 2)$; radius: 9 B. centre: $(x, y) = (-1, 2)$; radius: 3
   C. centre: $(x, y) = (2, -1)$; radius: 9 D. centre: $(x, y) = (2, -1)$; radius: 3

10. If $x < -1$, then $\sqrt{x^2 + x} + x =$

    A. $\dfrac{1}{\sqrt{1 + 1/x} + 1}$ B. $\dfrac{1}{\sqrt{1 + 1/x} - 1}$ C. $\dfrac{-1}{\sqrt{1 + 1/x} - 1}$ D. $\dfrac{-1}{\sqrt{1 + 1/x} + 1}$