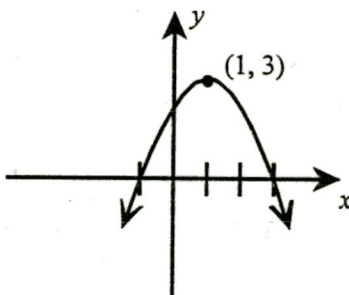


ALGEBRA II
2006 ACTM STATE CONTEST

1. $\sqrt[3]{2} \sqrt{3} =$

- a) $\sqrt[3]{6}$ b) $\sqrt[4]{6}$ c) $\sqrt[5]{72}$ d) $\sqrt[6]{108}$

2. If the equation of the parabola shown below were written in the form $y = a(x - h)^2 + k$, what would be the value of a ?



- a) $-\frac{3}{4}$ b) $-\frac{1}{3}$ c) $\frac{1}{3}$ d) -3

3. The functions $y = x^2$ and $y = 4 - 3x$ intersect at the point (a, b) . Which of the following is a possible value for b ?

- a) -4 b) -1 c) 0 d) 16

4. Let $f(x) = |x|$ and $g(x) = \sqrt{x}$. The domain of the composition $f \circ g$ is

- a) $[0, \infty)$ b) $(0, \infty)$ c) $(-\infty, 0) \cup (0, \infty)$ d) $(-\infty, \infty)$

5. Write $\frac{1}{1 + \frac{1}{1+x}}$ as a simple fraction.

- a) $x + 3$ b) $\frac{x+1}{2}$ c) $x + 1$ d) $\frac{x+1}{x+2}$

6. In an experiment, a fair coin is tossed until it is a head. What is the probability the coin is tossed 4 times?

