**PAP Algebra 2**                                                    **Name:**_____
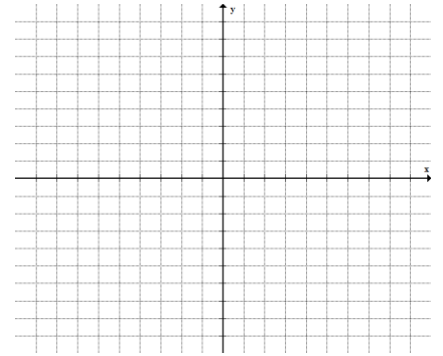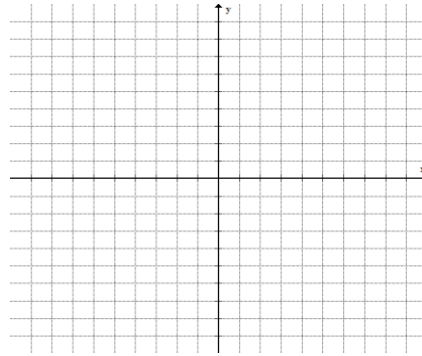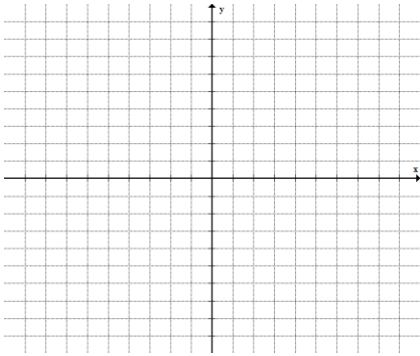**4.1 Transformations of Cubic Functions Practice**

For #1-9: List the transformations, make a table of critical points, and sketch the graph.

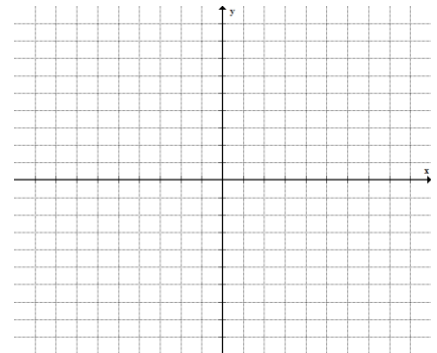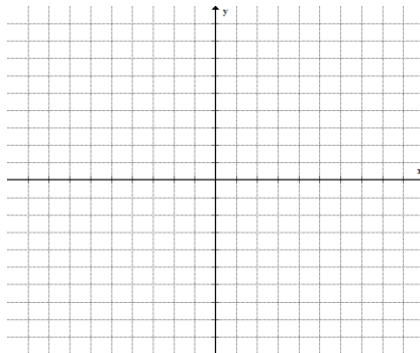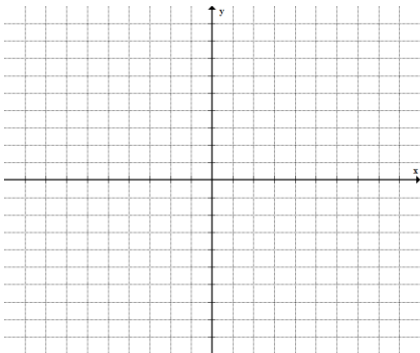**1.** $f(x) = x^3 - 3$          **2.** $f(x) = -2x^3 + 3$          **3.** $f(x) = (x-5)^3 - 2$

**4.** $f(x) = \dfrac{1}{3}(x+5)^3$          **5.** $f(x) = -3(x+4)^3 + 3$          **6.** $f(x) = -\dfrac{1}{2}(x+1)^3 - 2$
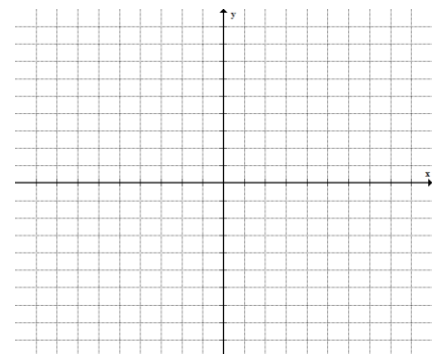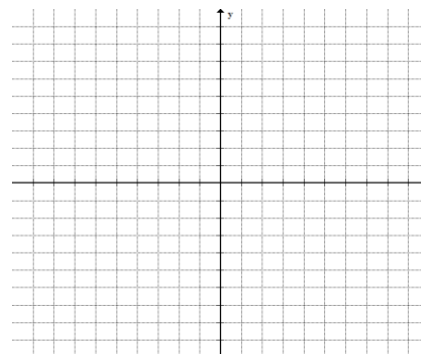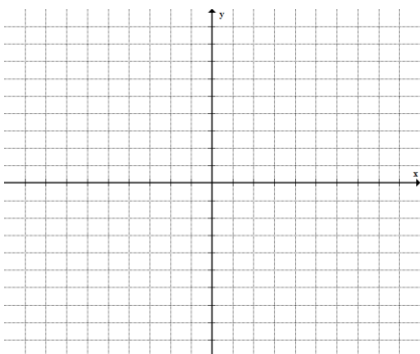
**7.** $f(x) = 0.25x^3$          **8.** $f(x) = -x^3 + 4$          **9.** $f(x) = 2(x+1)^3 - 3$

For #10-15: Answer each question.

**10.** The graph of $f(x) = x^3$ has been transformed so that its critical point is (4, -1). What is the equation?

**11.** The graph of $f(x) = x^3$ has been transformed so that its critical point is still (0, 0), but it now goes through the point (1, 5). What is the new equation?

**12.** The graph of $f(x) = x^3$ has been shifted left 4.4 units, down 0.5 units, and is upside-down. What is the new equation?

**13.** The graph of $f(x) = x^3$ has been transformed so that its critical point is ( 4 , 0), and goes through ( 3 , 2 ) & ( 5 , - 2 ). What is the new equation?

**14.** The graph of $f(x) = x^3$ has been transformed so that its critical point is on the y-axis and it goes through the points (-1, 2) and (1, 4). What is the new equation?

**15.** If the critical point of a cubic function is (1, 1) can the graph go through the points (0, 0) and (2, 3)? If so what is the equation? If not, explain why.