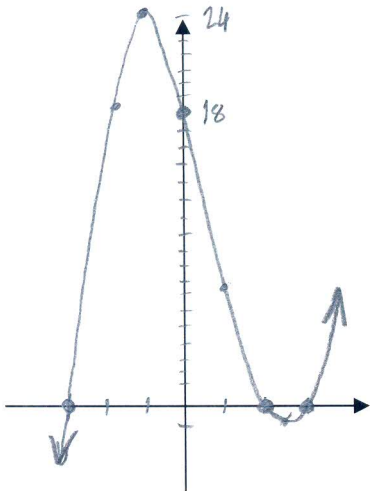


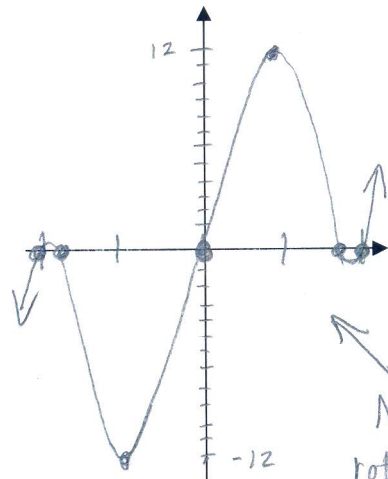
Graph each function. Identify x-intercepts (zeros), y-intercept, and turning points.

1. $y = x^3 - 2x^2 - 9x + 18 = x^2(x-2) - 9(x-2)$
 $= (x-2)(x^2-9)$
 $= (x-2)(x+3)(x-3)$



$f(0) = 18$
 $f(1) = 8$
 $f(-1) = 24$
 $f(-2) = 20$
 $f(2.5) = -1.4$

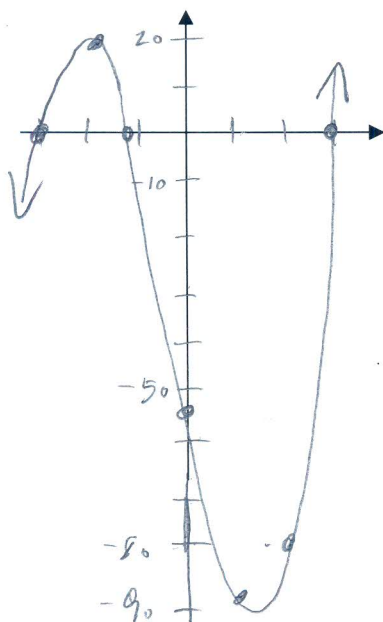
2. $y = 2x^5 - 14x^3 + 24x = 2x(x^4 - 7x^2 + 12)$
 $= 2x(x^2 - 4)(x^2 - 3)$
 $= 2x(x+2)(x-2)(x+\sqrt{3})(x-\sqrt{3})$



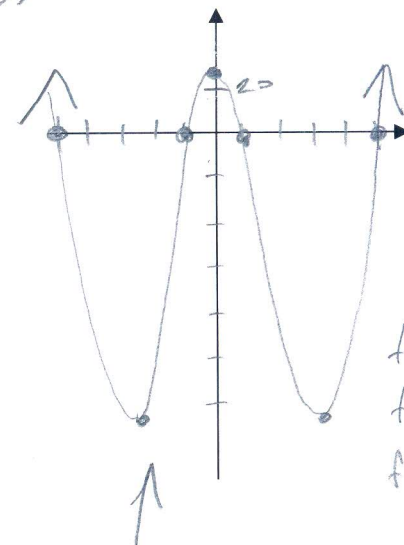
$\sqrt{3} \approx 1.7$
 $f(1) = 12$

Notice the rotational symmetry?!
 It's an odd function!

3. $y = 5x^3 + 6x^2 - 45x - 54 = x^2(5x+6) - 9(5x+6)$
 $= (5x+6)(x^2-9)$
 $= (5x+6)(x+3)(x-3)$



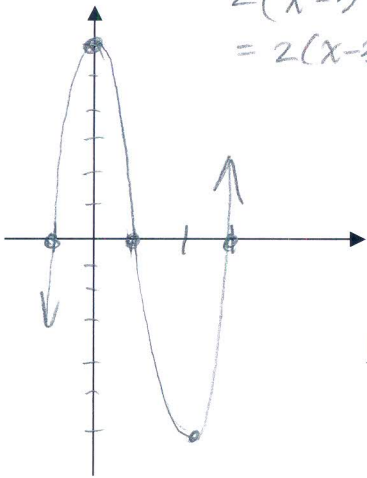
$f(0) = -54$
 $f(1) = -88$
 $f(2) = -80$
 $f(-2) = 20$



$f(0) = 25$
 $f(3) = -128$
 $f(-3) = -128$

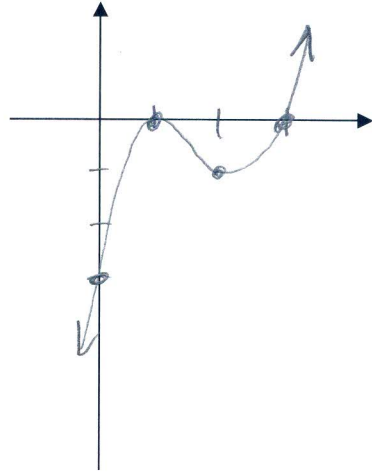
Notice the vertical symmetry?!
 It's an even function!

5. $f(x) = 2x^3 - 6x^2 - 2x + 6$
 $= 2x^2(x-3) - 2(x-3)$
 $= (x-3)(2x^2-2)$
 $= 2(x-3)(x^2-1)$
 $= 2(x-3)(x+1)(x-1)$



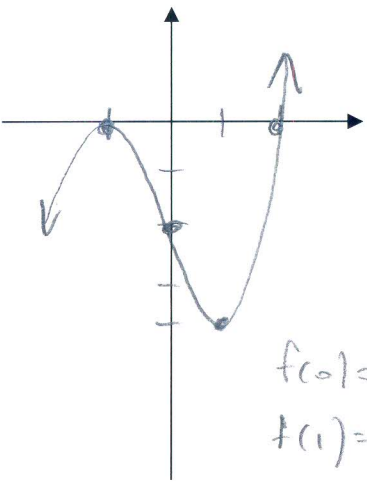
$f(0) = 6$
 $f(2) = -6$

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



$f(0) = -3$
 $f(2) = -1$

7. $f(x) = (x-2)(x^2 + 2x + 1)$
 $= (x-2)(x+1)(x+1)$

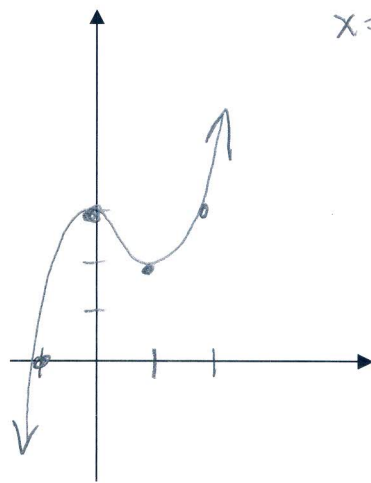


$f(0) = -2$
 $f(1) = -4$

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

↑ not factorable!

$x = \frac{3 \pm \sqrt{-3}}{2}$ imaginary
 so no x-int(s)!



Investigate
 $f(0) = 3$
 $f(1) = 2$
 $f(2) = 3$