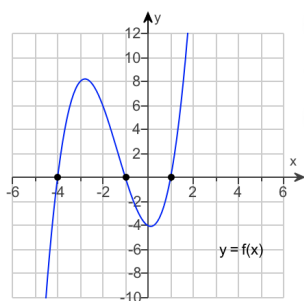


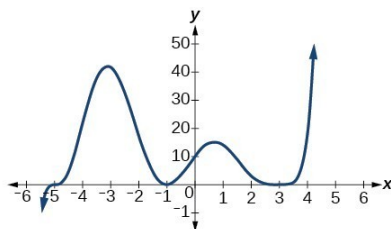
Show all work and simplify all answers before circling/boxing them. If you do the problem incorrectly, or don't show sufficient work, you will be asked to rewrite the problem for full credit.

Due next class. Students who turn assignments in late (or do not attempt a problem) forfeit their ability to rewrite those problems for credit.

- (1) Use the graph below to list the factors of $f(x)$, then state if the multiplicity of that factor is even or odd.



- (2) Use the graph below to list the factors of $f(x)$, then state if the multiplicity of that factor is even or odd.



- (3) List all the possible rational roots (using the rational root test) of $f(x) = 2x^3 - 5x^2 - 4x + 10$
- (4) Factor $x^3 - 2x^2 - 5x + 6$ completely
- (5) Factor $x^3 + 5x^2 - 9x - 45$ completely
- (6) Factor $3x^4 - 8x^3 - 67x^2 + 112x + 240$ completely, given that $x = 3$ is a root
- (7) Factor $x^4 - 2x^3 - 13x^2 - 10x$ completely, given that $x = 3$ is a root
- (8) Solve the equation: $x^3 - 3x^2 - 18x = 0$
- (9) Solve the equation: $3x^3 + 18 = 2x^2 + 27x$
- (10) Solve the equation: $x^4 - x^2 = 0$