# 5.2 The Fundamental Theorem of Algebra

Date_____ Period____

**State the number of solutions for each function.**

1) $f(x) = 98x^3 - 12 + 527x^6$

2) $f(x) = 9x^6 + 9x^4 - 4x^2 - 4$

3) $f(x) = x^4 - 2x^2 + 2x^6 - 1$

4) $f(x) = 3x^3 + x^2 + 31x - 22$

5) $f(x) = -2x^4 + 35x^3 - 75x + 10x^5 + 15 - 7x^2$

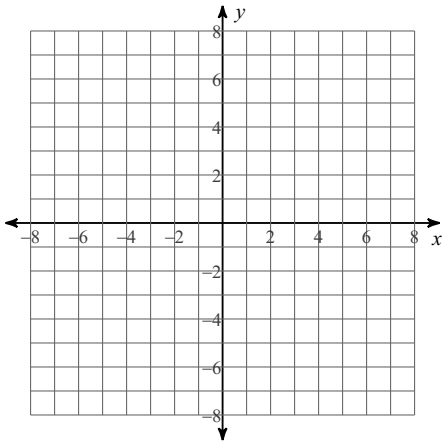
6) $f(x) = 27x^6 - 64 + 208x^3$

7) $f(x) = 3x^3 - 20x^2 + 25x$

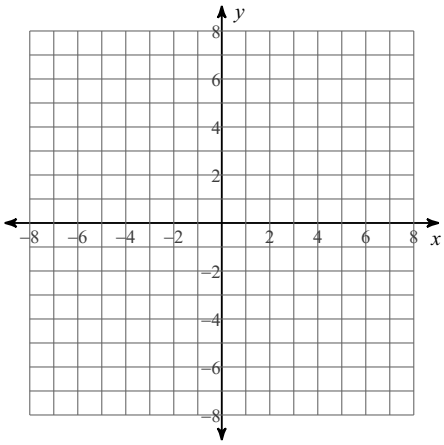
8) $f(x) = 2x^3 + 5x^2 + 4x + 1$

**Determine the number of real solutions, the number of complex solutions, and the total number of solutions for each funciton.**

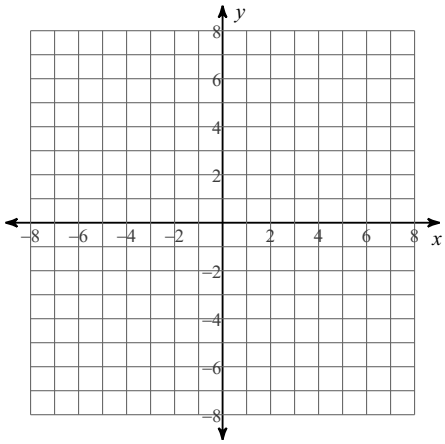
9) $f(x) = x^5 - 4x^3 + 3x + 4$



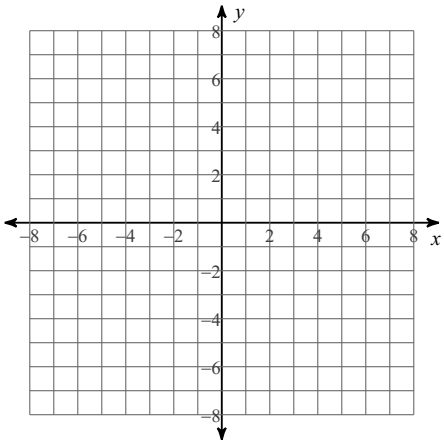

10) $f(x) = x^2 + 4x + 5$



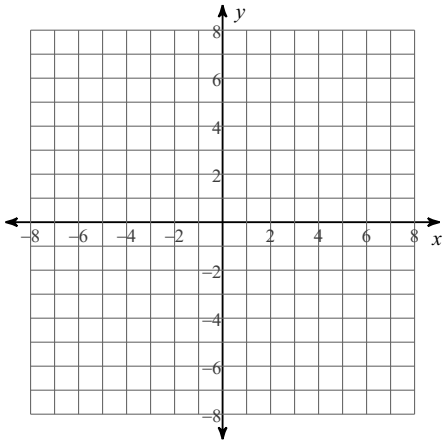

11) $f(x) = -x^3 + 3x^2 - 1$



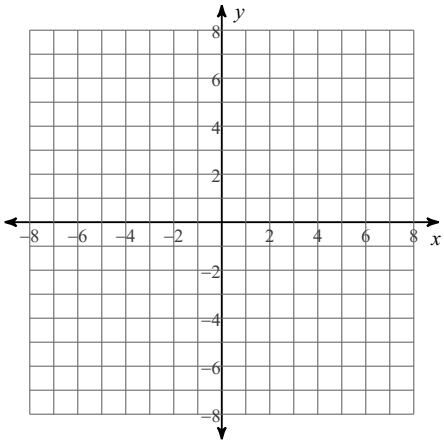

12) $f(x) = x^3 - 2x^2 + 2$



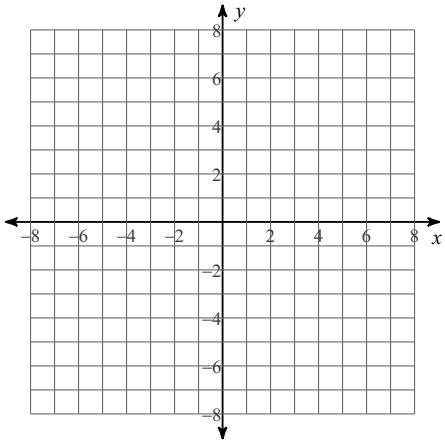
13) $f(x) = x^4 - 4x^2 - 2x + 3$



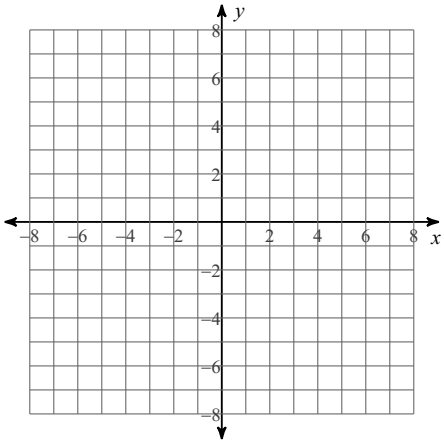

14) $f(x) = -x^5 + 3x^3 - 2x$



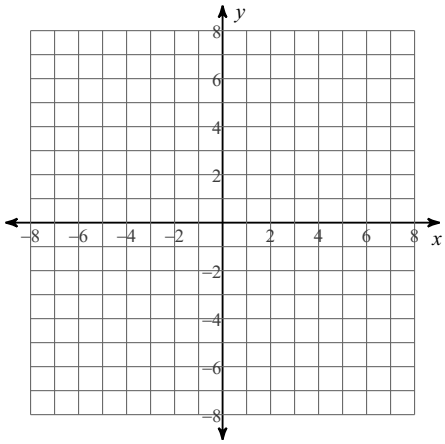

15) $f(x) = 2x^2 - 4x + 3$




16) $f(x) = -x^4 - x^3 + x^2 + 4$




17) $f(x) = -x^2 + 2x - 1$




18) $f(x) = -x^4 + x^2 - x - 1$