

Unit 2: Polynomial Properties Review

Simplify each expression.

1) $(7 + 2v^2 + 7v^4) + (3 - 4v^4 - 7v^2)$

2) $(8x^2 - 6x - 6x^3) - (7 - 2x^2 - x^3)$

Find each product.

3) $(5n - 8)(6n + 4)$

4) $(4r + 4)(4r - 8)$

Use long division to divide.

5) $(p^3 - 16p^2 + 63p - 1) \div (p - 8)$

6) $(a^3 - a^2 - 4a - 30) \div (a - 4)$

7) $(x^4 + x^3 - 26x^2 + 23x + 4) \div (x - 4)$

8) $(p^3 - 10p^2 + 14p + 40) \div (p - 4)$

Find the remainder.

9) $(x^3 + 6x^2 + 11x + 12) \div (x + 1)$

10) $(9n^3 + 27n^2 + 10n - 6) \div (n + 2)$

11) $(k^3 - 15k^2 + 64k - 50) \div (k - 7)$

12) $(m^3 - 9m^2 + 13m + 28) \div (m - 6)$

State if the factor is a root of the polynomial. If so, write as a product of two factors.

13) $(n^3 - 12n^2 + 43n - 42) \div (n - 6)$

14) $(9x^3 + 51x^2 + 21x - 44) \div (x + 5)$

15) $(6p^3 + 45p^2 - 14p + 80) \div (p + 8)$

16) $(r^3 + 9r^2 + 23r + 17) \div (r + 5)$

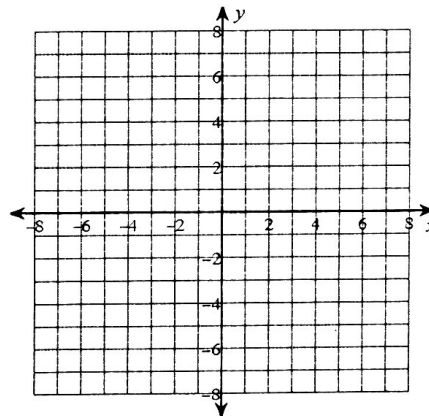
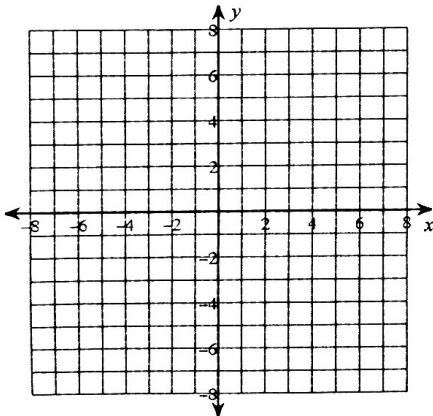
17) $(6p^3 + 31p^2 - 29p + 7) \div (p + 6)$

18) $(x^3 - 4x^2 + 9x - 6) \div (x - 1)$

Classify each polynomial. Then sketch the graph of each function. Find the zeros, maximums, minimums, and y-intercept. State the domain, range, end behavior, and increasing and decreasing intervals.

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

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



Classification:

Classification:

Zeros:

Zeros:

Maximum:

Maximum:

Minimum:

Minimum:

y-intercept:

y-intercept:

Domain:

Increasing:

Domain:

Increasing:

Range:

Decreasing:

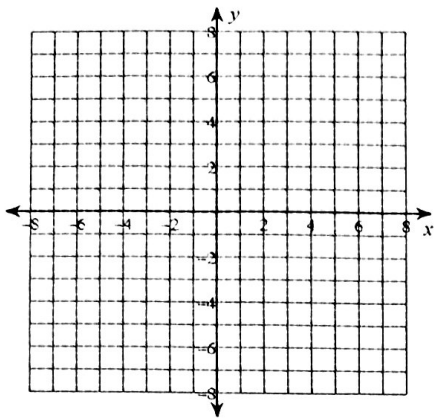
Range:

Decreasing:

End behavior:

End behavior:

21) $f(x) = -x^5 + 4x^3 - 5x - 2$



Classification:

Zeros:

Maximum:

Minimum:

y-intercept:

Domain:

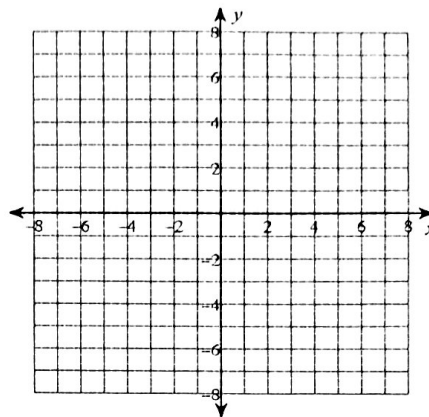
Range:

End behavior:

Increasing:

Decreasing:

22) $f(x) = -x^5 + 2x^3 - 4$



Classification:

Zeros:

Maximum:

Minimum:

y-intercept:

Domain:

Range:

End behavior:

Increasing:

Decreasing:

23) Find a polynomial function through the points $(-4, 16)$, $(5, 51)$, $(12, -3)$, and $(20, -6)$.

24) Find a polynomial function through the points $(-10, 103)$, $(6, 217)$, $(15, -35)$.

25) Use your function from #24 to predict the y-values for $x = -3$, $x = 8$, and $x = 25$.