

College Algebra
Review for Test 3
Luczak

Give only exact answers, no decimal approximations!

- Given $y = (x+3)^2 - 4$
 - Find the vertex.
 - Find the x-intercept.
 - Find the y-intercept.
- Given $y = -x^2 + x + 12$
 - Find the vertex.
 - Find the x-intercept.
 - Find the y-intercept.
 - Write in standard form $y = a(x-h)^2 + k$
- Write an equation of a quadratic function with intercepts $(-5, 0)$ and $(4, 0)$:
 - Which opens upward.
 - Which opens downward.
- A textile manufacturer has daily production costs $C(x) = 800 - 10x + .25x^2$ where $C(x)$ represents the total cost and x is the number of units produced. How many units must be manufactured daily to yield a minimum cost? How much is the daily minimum cost?
- If $f(-4) = 0$ then what must be a factor of $f(x)$?
- Divide: $\frac{3x^4}{x^2 - 1}$. Write answer in the form $q(x) + \frac{r(x)}{d(x)}$.
- Divide: $(6x^4 - 4x^3 - 27x^2 + 18x + 1) \div \left(x - \frac{2}{3}\right)$. Write answer in the form $q(x) + \frac{r(x)}{d(x)}$.
- Find the constant c such that $(x-5)$ is a factor of $(x^3 + 4x^2 - 3x + c)$.
- When $f(x)$ is divided by $(x+3)$ the remainder is 7. Name a point (x, y) that is on the graph of $f(x)$.
- If $f(x)$ has zeros: $2 \pm 3i, -1, 3$ (multiplicity 4) what is the degree of $f(x)$?

11. Let $f(x) = 12x^4 + 7x^3 + 2x^2 + 7x - 10$

a) List all zeros.

12. Let $f(x) = x^4 - 2x^3 + 10x^2 - 18x + 9$

a) List all zeros.

b) Write $f(x)$ as a product of linear factors.

13. Find a and b : $(a + b) + 5i = -3 + ai$

14. Write i^{137} as $1, -1, i$ or $-i$.

15. Perform the indicated operation. Leave answer in $a + bi$ form: $(3 + \sqrt{-5})(7 - \sqrt{-10})$

16. Write the equation of a polynomial of degree 3 with real coefficients that has zeros: $-2i, -2$. (multiply out)

17. Write an equation for a polynomial that has zeros: 5, 2, -2, -3 (multiplicity 3). Leave your answer in factored form.

18. Find all asymptotes:

a) $y = \frac{x+5}{x^2+2x-15}$

b) $y = \frac{x^2+x-3}{x+1}$

19. Write an equation for a function that has

VA: $x = 0, 3$

HA: $y = 5$

OA: None