Activity 3.2: Zeros, Factoring & Inequalities

A

Name: _____ Partner's name: _____ Date: _____

Directions: Answer each question. Show your work.

Work alone, then compare after each problem. If answers differ, find the mistake together.

1

Factor completely: $x^3 - 27$.

Answer: _____ Match? ☐ Yes ☐ No

2

Solve: $x^3 + 3x^2 - 4x - 12 = 0$.

Answer: _____ Match? ☐ Yes ☐ No

3

For $f(x) = (x-1)^2(x+3)$, at which x-value does the graph touch the x-axis without crossing?

Answer: _____ Match? ☐ Yes ☐ No

4

Write the monic cubic polynomial with zeros 2, -1, and 3 in standard form.

Answer: _____ Match? ☐ Yes ☐ No

5

Find all zeros of $x^4 - 16$.

Answer: _____ Match? ☐ Yes ☐ No

6

How many complex zeros (counting multiplicity) does $f(x) = x^5 - 3x^2 + 1$ have?

Answer: _____ Match? ☐ Yes ☐ No

7

A cubic polynomial with real coefficients has zeros 2 and $3 + i$. Find the third zero.

Answer: _____ Match? ☐ Yes ☐ No

8

Solve: $(x-1)(x+3) > 0$.

Answer: _____ Match? ☐ Yes ☐ No

UNIT 3 • POLYNOMIAL FUNCTIONS

Activity 3.2: Zeros, Factoring & Inequalities

B

Name: _____ Partner's name: _____ Date: _____

Directions: Answer each question. Show your work.

Work alone, then compare after each problem. If answers differ, find the mistake together.

1

Factor completely: $x^3 - 10 - 17$.

Answer: _____ Match? ☐ Yes ☐ No

2

Solve: $2x^3 + 6x^2 - 8x - 24 = 0$.

Answer: _____ Match? ☐ Yes ☐ No

3

For $g(x) = (x+2)(x-1)^2(x-5)$, at which x-value does the graph touch the x-axis without crossing?

Answer: _____ Match? ☐ Yes ☐ No

4

Expand and simplify: $(x-2)(x^2-2x-3)$.

Answer: _____ Match? ☐ Yes ☐ No

5

Find all zeros of $3x^4 - 48$.

Answer: _____ Match? ☐ Yes ☐ No

6

How many complex zeros (counting multiplicity) does $f(x) = (x-1)^3(x+2)^2$ have?

Answer: _____ Match? ☐ Yes ☐ No

7

A cubic polynomial with real coefficients has zeros -1 and $3+i$. Find the third zero.

Answer: _____ Match? ☐ Yes ☐ No

8

Solve: $x^2 + 2x - 3 > 0$.

Answer: _____ Match? ☐ Yes ☐ No