

Exercise 30

For the following exercises, find the zeros and give the multiplicity of each.

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

Solution

To find the zeros, set $f(x) = 0$ and solve the equation for x .

$$(x + 2)^3(x - 3)^2 = 0$$

$$(x + 2)^3 = 0 \quad \text{or} \quad (x - 3)^2 = 0$$

$$x + 2 = 0 \quad \text{or} \quad x - 3 = 0$$

$$x = -2 \quad \text{or} \quad x = 3$$

The multiplicity of $x = -2$ is 3, and the multiplicity of $x = 3$ is 2.