

# Holiday House Zeros of Polynomial Functions



Find the zeros of each polynomial function then color the gingerbread house correctly.

1. $f(x) = 2x^4 - 15x^2 + 28$	<b>Blue</b> $2, -2, \frac{\sqrt{14}}{2}, -\frac{\sqrt{14}}{2}$	<b>Green</b> $2, -2, \frac{\sqrt{14}}{4}, -\frac{\sqrt{14}}{4}$
2. $f(x) = x^3 + 7x^2 - 5x - 35$	<b>Red</b> $-7, 5, -5$	<b>Yellow</b> $-7, \sqrt{5}, -\sqrt{5}$
3. $f(x) = x^3 - 48x - 128$	<b>Green</b> $-4 \text{ mult } 2, 8$	<b>Pink</b> $-4, 4, 8$
4. $f(x) = x^3 + 5x^2 + 49x + 245$	<b>Purple</b> $-5, \sqrt{7}, -\sqrt{7}$	<b>Red</b> $-5, 7i, -7i$
5. $f(x) = x^3 - 8x^2 + 17x - 30$	<b>Black</b> $6, 1 + \sqrt{5}, 1 - \sqrt{5}$	<b>Brown</b> $6, 1 + 2i, 1 - 2i$
6. $f(x) = x^4 + 9x^3 + 17x^2 - 9x - 18$	<b>Yellow</b> $-6 - 3, -1, 1$	<b>Red</b> $-1, 1, 3, 6$
7. $f(x) = x^3 - 7x^2 + 8x + 10$	<b>Red</b> $5, 1 + \sqrt{3}, 1 - \sqrt{3}$	<b>Green</b> $5, -1 + \sqrt{3}, -1 - \sqrt{3}$
8. $f(x) = 3x^4 - 10x^3 + 20x^2 - 40x + 32$	<b>Green</b> $\frac{4}{3}, 2, 2i, -2i$	<b>Yellow</b> $\frac{4}{3}, 2, i, -i$
9. $f(x) = x^3 - 64$	<b>Green</b> $4, 2 + 2\sqrt{3}i, 2 - 2\sqrt{3}i$	<b>Black</b> $4, -2 + 2\sqrt{3}i, -2 - 2\sqrt{3}i$
10. $f(x) = x^4 - 6x^3 + 11x^2 - 12x + 18$	<b>Red</b> $3 \text{ mult } 2, \sqrt{2}, -\sqrt{2}$	<b>White</b> $3 \text{ mult } 2, i\sqrt{2}, -i\sqrt{2}$