Name : _____ Score : _____

Teacher : _____ Date : _____

Factors and Zeros

Find all zeros.

1) $(x + 4)(x + 3)(x - 3)$

2) $(x + 4)^2(x - 4)(x + 5)$

3) $(x^2 - 5)(x^2 + 1)(x + 4)(x - 2)$

4) $(2x - 5)^2(x - 2)^2$

Given the zeros, find the least degree polynomial with integer coefficients.

5) { 4 mult. , -4 mult.}

6) $\{\frac{-\sqrt{3}}{8}, \frac{\sqrt{3}}{8}$, 3 mult.$\}$

7) $\{ -\sqrt{3}\ i , \sqrt{3}\ i , 5\}$

8) { 3 , -3}

Find all zeros by factoring.

9) $(4 x^5 - 12 x^4 - 87 x^3 + 293 x^2 - 216 x + 720)$

10) $(5 x^3 + 32 x^2 + 29 x - 30)$

11) $(4 x^3 - 12 x^2 + 3 x - 9)$

12) $(x^3 + 2 x^2 + 16 x + 32)$

Name : _____ Score : _____

Teacher : _____ Date : _____

Factors and Zeros

Find all zeros.

1) $(x + 4)(x + 3)(x - 3)$

{ -4 , -3 , 3}

2) $(x + 4)^2(x - 4)(x + 5)$

{ -4 mult. , 4 , -5}

3) $(x^2 - 5)(x^2 + 1)(x + 4)(x - 2)$

$\{ -\sqrt{5} , \sqrt{5} , -i, i, -4 , 2\}$

4) $(2x - 5)^2(x - 2)^2$

$\{ \frac{5}{2}$ mult. , 2 mult.$\}$

Given the zeros, find the least degree polynomial with integer coefficients.

5) { 4 mult. , -4 mult.}

$(x^4 - 32 x^2 + 256)$

6) $\{ \frac{-\sqrt{3}}{8} , \frac{\sqrt{3}}{8}$, 3 mult.$\}$

$(64 x^4 - 384 x^3 + 573 x^2 + 18 x - 27)$

7) $\{ -\sqrt{3}\, i , \sqrt{3}\, i , 5\}$

$(x^3 - 5 x^2 + 3 x - 15)$

8) { 3 , -3}

$(x^2 - 9)$

Find all zeros by factoring.

9) $(4 x^5 - 12 x^4 - 87 x^3 + 293 x^2 - 216 x + 720)$

$\{ \frac{-3}{2} i , \frac{3}{2} i$, 4 mult. , -5$\}$

10) $(5 x^3 + 32 x^2 + 29 x - 30)$

$\{ \frac{3}{5}$, -2 , -5$\}$

11) $(4 x^3 - 12 x^2 + 3 x - 9)$

$\{ \frac{-\sqrt{3} i}{2} , \frac{\sqrt{3} i}{2}$, 3$\}$

12) $(x^3 + 2 x^2 + 16 x + 32)$

{ -2 , -4i , 4i}