

# Homework 4.5: Fundamental Theorem

Name: \_\_\_\_\_

Math 3

Directions: For each, factor and solve for the intercepts. Then, state the end behavior and sketch the graph.

<p>1. Equation: <math>f(x) = -x(x-2)(x-4)</math></p> <p>Intercepts:  <math>x=0</math>   <math>x=2</math>   <math>x=4</math></p> <p>cubic ↷</p> <p>End Behavior:              as <math>x \rightarrow -\infty</math>, <math>f(x) \rightarrow \underline{\underline{\infty}}</math>              as <math>x \rightarrow \infty</math>, <math>f(x) \rightarrow \underline{\underline{-\infty}}</math></p>	<p>Graph:</p>
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<p>2. Equation: <math>g(x) = x(x^2 + 4x + 4)</math></p> <p>Intercepts:  <math>x(x+2)(x+2)</math>  <math>x=0</math>   <math>x=-2</math> (M:2)</p> <p>cubic ↷</p> <p>End Behavior:              as <math>x \rightarrow -\infty</math>, <math>f(x) \rightarrow \underline{\underline{-\infty}}</math>              as <math>x \rightarrow \infty</math>, <math>f(x) \rightarrow \underline{\underline{\infty}}</math></p>	<p>Graph:</p>
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<p>3. Equation: <math>y = x^3 - x^2</math></p> <p>Intercepts:  <math>x^2(x-1)</math>  <math>x=0</math>   <math>x=1</math>              (M:2)</p> <p>cubic ↷</p> <p>End Behavior:              as <math>x \rightarrow -\infty</math>, <math>f(x) \rightarrow \underline{\underline{-\infty}}</math>              as <math>x \rightarrow \infty</math>, <math>f(x) \rightarrow \underline{\underline{\infty}}</math></p>	<p>Graph:</p>
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<p>4. Equation: <math>h(x) = x^3 - 2x^2 - 3x</math></p> <p>Intercepts:  <math>x(x^2 - 2x - 3)</math>  <math>x(x-3)(x+1)</math>  <math>x=0</math>   <math>x=3</math>   <math>x=-1</math></p> <p>cubic ↷</p> <p>End Behavior:              as <math>x \rightarrow -\infty</math>, <math>f(x) \rightarrow \underline{\underline{-\infty}}</math>              as <math>x \rightarrow \infty</math>, <math>f(x) \rightarrow \underline{\underline{\infty}}</math></p>	<p>Graph:</p>
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