

# Math III - Skills Review Packet

## INSTRUCTIONS

The purpose of this packet is to help you brush up on the BASIC skills you need to have mastered as we go into review week. You will **complete this packet over the break**.

The completed packet is **due Monday, January 5<sup>th</sup>** at the beginning of class. A 10 point reduction will be assessed for each day the packet is late. The completed packet will count as **½ a unit test grade (formal)**.

An electronic version of this document can be found on the Math 3 WIKI page and your teacher's webpage. To easily access video links, bring up the document on the website and click on the links in the document.

## TRIANGLE PROOFS

Match each term with its corresponding picture.

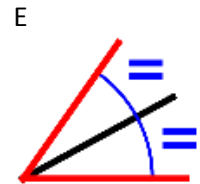
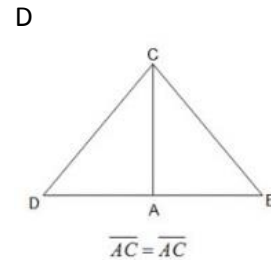
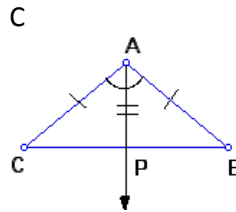
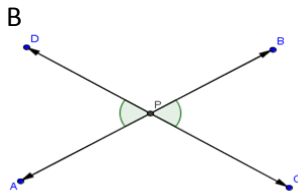
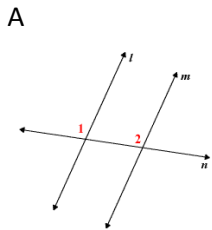
1. Reflexive

2. Vertical Angles

3. Corresponding Angles

4. SAS

5. Bisector



### Review Videos



VIDEO LINK [https://www.youtube.com/watch?v=mDjWUzQ6\\_g0](https://www.youtube.com/watch?v=mDjWUzQ6_g0)

Graph and Find the Vertex of:  $f(x) = -2(x - 1)^2 + 3$



VIDEO LINK <https://www.youtube.com/watch?v=TiJrnc-xKS8>

What are the transformations from the parent function  $f(x) = -\frac{3}{2}(x + 2)^3 - 3$

List all of the transformations of the following functions:

1)  $f(x) = \sqrt{x - 3} + 2$

2)  $f(x) = -3(x + 1)^2 - 5$

3)  $f(x) = -\frac{1}{4}|x - 6| - 5$

4)  $f(x) = \frac{1}{2}(x + 1)^3 - 4$

# Math III - Skills Review Packet

## SIMPLIFYING RADICALS

### Review Videos



VIDEO  
LINK

<https://www.youtube.com/watch?v=-Vq2z4DKWoA#t=21>

$\sqrt{54}$	$\sqrt[4]{48x^6y^2z^8}$
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### Practice

1.  $\sqrt{40}$

2.  $\sqrt{75}$

3.  $\sqrt{60x^5}$

4.  $\sqrt[3]{24}$

5.  $\sqrt{40x^6y^5}$

6.  $\sqrt[3]{24x^3y^8}$

VIDEO LINK <https://www.youtube.com/watch?v=QZ4XCHTZYn8>

$$\text{Solve: } \frac{1}{3}t^2 + \frac{1}{2}t = 2$$

VIDEO LINK <https://www.youtube.com/watch?v=J3304SzvitM>

$$\text{Solve: } x^2 + 2x + 10 = 0$$

Solve the following:

1.  $x^2 - 8x - 15 = 0$

2.  $2x^2 + 3 = 7x$

3.  $5x + 1 = -3x^2$

4.  $4x^2 + 4x = -1$

Review Videos



VIDEO LINK [https://www.youtube.com/watch?v=l6\\_ghhd7kwQ](https://www.youtube.com/watch?v=l6_ghhd7kwQ)

$$\frac{x^2 + 4x - 8}{x - 2}$$



VIDEO LINK <https://www.youtube.com/watch?v=FTRDPB1wR5Y>

$$\frac{x^4 - x^2 + x - 4}{x^2 - 2x + 5}$$

Independent Practice

$(x^2 - 74) \div (x - 8)$	$\frac{2p^2 + 7p - 39}{2p - 7}$
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Review Videos



VIDEO LINK <https://www.youtube.com/watch?v=bZoMz1Cy1T4>

$$\frac{x^3 - 2x^2 + 3x - 4}{x - 2}$$



VIDEO LINK <https://www.youtube.com/watch?v=nefo9cUo-wg>

$$\frac{x^4 - x^2 + 5}{x + 3}$$

Independent Practice

$(n^3 + 7n^2 + 14n + 3) \div (n + 2)$	$\frac{p^3 - 10p^2 + 20p + 26}{p - 5}$
$(x^4 + 4x + 1) \div (x - 1)$	$\frac{q^3 - 12q^2 + 36}{p + 2}$

Properties



VIDEO LINK <http://patrickjmt.com/properties-of-logarithms-part-1/>

$\log_{10} 100 = x$	$\log_2 x = 3$	$\log_7 \left(\frac{1}{49}\right) = x$
$\log_3 \left(\frac{x^2(y+1)}{z^3}\right)$		

Expanding and Condensing



VIDEO LINK <https://www.youtube.com/watch?v=nefo9cUo-wg>

$\log_7 5x^3yz^2$
$5 \log x - 4 \log y$

Independent Practice

<p>Convert to the alternate form</p> <table style="width: 100%;"> <tr> <td><math>\log_2 16 = 4</math></td> <td><math>\log_7 x = 3</math></td> </tr> <tr> <td><math>\log_5(x - 1) = 2</math></td> <td><math>\log_{27} x = \frac{1}{3}</math></td> </tr> <tr> <td><math>\ln x = 0</math></td> <td><math>\ln 3 = x</math></td> </tr> <tr> <td><math>2^3 = 8</math></td> <td><math>(x + 2)^2 = y</math></td> </tr> <tr> <td><math>e^2 = x</math></td> <td><math>e^{x+1} = y</math></td> </tr> <tr> <td><math>x^{0.5} = y</math></td> <td><math>27^x = y</math></td> </tr> </table>	$\log_2 16 = 4$	$\log_7 x = 3$	$\log_5(x - 1) = 2$	$\log_{27} x = \frac{1}{3}$	$\ln x = 0$	$\ln 3 = x$	$2^3 = 8$	$(x + 2)^2 = y$	$e^2 = x$	$e^{x+1} = y$	$x^{0.5} = y$	$27^x = y$	<p>Expand the following log statements</p> <p><math>\log_5 25x^2yz^{\frac{1}{3}}</math></p> <p><math>\log \left(\frac{(x + 2)^2 y^3}{p^5 q}\right)</math></p> <p><math>\ln ex^2y</math></p>
$\log_2 16 = 4$	$\log_7 x = 3$												
$\log_5(x - 1) = 2$	$\log_{27} x = \frac{1}{3}$												
$\ln x = 0$	$\ln 3 = x$												
$2^3 = 8$	$(x + 2)^2 = y$												
$e^2 = x$	$e^{x+1} = y$												
$x^{0.5} = y$	$27^x = y$												
<p>Condense the following statements into a single logarithm</p> <table style="width: 100%;"> <tr> <td><math>2 \log x + 3 \log y - \frac{1}{2} \log z</math></td> <td><math>\ln p - 2 \ln q - \ln r</math></td> </tr> </table>		$2 \log x + 3 \log y - \frac{1}{2} \log z$	$\ln p - 2 \ln q - \ln r$										
$2 \log x + 3 \log y - \frac{1}{2} \log z$	$\ln p - 2 \ln q - \ln r$												

## Simplifying Rational Functions:



VIDEO LINK

<http://patrickjmt.com/rational-expressions-multiplying-and-dividing-ex-1/><http://patrickjmt.com/rational-expressions-writing-in-lowest-terms-ex-2/>

$$\frac{x+2}{x^2+5x+6}$$

$$\frac{x^2+2x-15}{x^2+x-12}$$

$$\frac{x^3 + 1}{x^2 + 7x + 6}$$

$$\frac{2x^2 + 11x + 5}{3x^2 + 17x + 10}$$

$$\frac{7x - 28}{x^2 - 16}$$



## Math III - Skills Review Packet

### Adding & Subtracting Rational Expressions:



VIDEO LINK

<http://patrickjmt.com/rational-expressions-adding-and-subtracting-ex-1/>

<http://patrickjmt.com/rational-expressions-adding-and-subtracting-ex-2/>

$$\frac{7}{x^2-64} + \frac{3}{x+8}$$

$$\frac{2}{x^2+5x+4} - \frac{3}{x^2-1}$$

$$\frac{4}{x^2-25} + \frac{6}{x^2+6x+5}$$

$$\frac{x+2}{x^2+4x+4} - \frac{2}{x+2}$$

## Math III - Skills Review Packet

### Multiplying & Dividing Rational Expressions:

<http://patrickjmt.com/rational-expressions-multiplying-and-dividing-ex-3/>



VIDEO LINK

<http://patrickjmt.com/rational-expressions-multiplying-and-dividing-ex-2/>

<http://patrickjmt.com/rational-expressions-multiplying-and-dividing-ex-1/>

$$\frac{8-k}{k^2-64} \div \frac{k-8}{k+8}$$

$$\frac{3x^2+7x+2}{x^2-2x-8} * \frac{x^2-3x-4}{x^2+3x+2}$$

$$\frac{5y^2+y}{y^2-1} \div \frac{10y^2+2y}{4y^2+y-5}$$

$$\frac{x^2+2x+1}{x^2-1} * \frac{x^2+3x+2}{x^2+4x+4}$$

$$\frac{x^2-3x-10}{2x^2-11x+5} \div \frac{x^2-5x+6}{2x^2-7x+3}$$

## Math III - Skills Review Packet

### Solving Rational Function Equations:



VIDEO LINK <http://patrickjmt.com/rational-equations-solving/>

$$\frac{6}{x^2} - \frac{5}{x} = 1$$

$$\frac{2}{x+2} + \frac{2}{x-4} = 1$$

$$\frac{3}{2x-4} = \frac{5}{3x+7}$$

$$\frac{2}{x+2} + \frac{5}{x-2} = \frac{6}{x^2-4}$$

### Review Videos



VIDEO  
LINK

<https://www.youtube.com/watch?v=JvDpYlyKkNU>

The equation of a circle C is  $(x + 3)^2 + (y - 4)^2 = 49$ . What are its center (h,k) and its radius, r?

### Practice

1. The equation of a circle C is  $(x - 2)^2 + (y + 5)^2 = 25$ . What are its center (h,k) and its radius, r?
2. The equation of a circle C is  $(x)^2 + (y + 1)^2 = 81$ . What are its center (h,k) and its radius, r?
3. Write the equation of a circle with center (2,3) and radius 4.
4. Write the equation of a circle with center (-5,2) and radius  $\sqrt{3}$