Hello student! Use this practice test to prepare for your math placement test: WAMAP Test 3. Answers are included at the end of document, if you are attempting to place into Math 141 and get $35 \%+$ correct we encourage you to take Test 3 with Highline College. If you are attempting to place into Math 142 , or move onto Test 4 , aim for $75 \%$ correct.

## Practice - Prep for Placement Test 3

1. Factor $x^{2}-5 x-6$
2. Factor $9 x^{2}-49$
3. Factor $3 x^{2}+10 x+8$
4. Factor each. If it is prime type "DNE" for "Does Not Exist"
$25 x^{2}-64 y^{2}=$ $\qquad$
$25 x^{2}+64 x^{2}=$ $\qquad$
5. Factor $5 a^{2}+19 a+12$

Select the correct choice below and, if necessary, fill in an answer box to complete your answer.
A. _The expression $5 a^{2}+19 a+12$ factors to $\qquad$
B. _The expression is not factorable.
6. Factor $25 w^{2}+81$

Select the correct choice below and, if necessary, fill in an answer box to complete your answer.
A. _The expression $25 w^{2}+81$ factors to $\qquad$
B. _The expression does not factor to two real binomials.
7. Solve.

$$
b^{2}+8 b=-7
$$

$b=$ $\qquad$
8. Solve:

$$
(y+9)(y+10)=20
$$

$y=$ $\qquad$
9. Use the quadratic formula to solve the equation.

$$
4 x^{2}-4 x-9=0
$$

$x=$ $\qquad$ Do not round.
10. Solve the equation $\frac{5}{x+1}-\frac{2}{x}=-1$.
$x=$ $\qquad$ (Enter largest value of $x$ here.)
$x=$ $\qquad$ (Enter smaller value of $x$ here.)

## Entry Tips:

Type an exact answer, use fractions, integers and/or radicals as needed, NOT decimal approximations.
11. Solve $24 r^{2}=7 r$
$r=$ $\qquad$
(Type an exact answer. Use a comma to separate answers as needed.
If there are two solutions list them from smallest to largest.)
12. Simplify. $(3 w+2)^{2}$
13. Simplify: $\left(\frac{3 a^{2}}{b^{2} c^{3}}\right)^{4}$
14. Simplify the expression completely:
$\left(\frac{x^{5}}{y^{7}}\right)^{3}=$ $\qquad$
15. Simplify: $\frac{4 c^{8}}{16 c^{2}}$
A. $-20 c^{6}$
B. $-\frac{12}{c^{6}}$
C. $-64 c^{10}$
D. $-\frac{c^{6}}{4}$
16. Use properties of exponents to simplify the expression $\frac{y^{13}}{y^{5}}$.

Express answer with positive exponents.
Select the correct choice below and fill in the associated answer box to complete your answer.
A. _A. $y^{m}$ where $m=$ $\qquad$
B. _B. $\frac{1}{y^{m}}$ where $m=$ $\qquad$
17. Add and simplify: $\frac{3}{x+6}+\frac{x+42}{x^{2}-36}$
18. Add. For answer, simplify numerator, but write denominator in factored form.
$\frac{13 x}{x^{2}-10 x+25}+\frac{3}{x-5}=$ $\qquad$
19. Simplify.
$\frac{b^{2}+2 b-48}{b^{2}-64}=$ $\qquad$
20. Simplify.
$\frac{3 y-12}{16-4 y}=$ $\qquad$
21. Consider the rational function $f(x)=\frac{2 x+19}{x^{2}-11 x+24}$ What are the equations of the vertical asymptote?
$\qquad$ (Enter your smallest $x$ equation FIRST.) Enter your largest $x$ equation SECOND.)
22. Simplify.
$4 \sqrt{54 y}+2 \sqrt{80 y}=$ $\qquad$
23. Simplify $\sqrt[5]{x^{6} y^{7}}$.
24. Solve. $\log _{5}(c)=8$
$c=$ $\qquad$
25. Solve the logarithmic equation. Give the exact answer.

$$
\log _{3}(7 x+3)=2
$$

The solution is $x=$ $\qquad$ (Give an exact answer, do not use decimals. Click in the answer box for more formatting options.)
26. Find the solution of the exponential equation. $9 e^{x}=3$
$x=$ $\qquad$
You may enter the exact solution or round to 4 decimal places.
27. Solve for $x$ :

$$
10^{4 x-6}=9^{8 x-9}
$$

$x=$ $\qquad$ .
28. The graph below is a transformed exponential, which can be written in the form $f(x)=$ $a b^{x}+c$, where $c$ is the horizontal asymptote.


What is the horizontal asymptote?
$c=$ $\qquad$

If we then plug the point $(0,-3)$ in for $x$ and $f(x)$, we can find that
$a=$ $\qquad$

Then plugging in the point $(-1,-1)$ for $x$ and $f(x)$, we can find that
$b=$ $\qquad$
29. Use the properites of logarithms to expand the following expression into a string of logarithms having no product, quotient, or power. When typing $\log (x)$ you need to use parenthesis and it should be typed as $\log (\mathbf{x})$. No decimals allowed.

$$
\log \left(\frac{x^{4} y^{2}}{z}\right)
$$

30. If $\log _{3}\left(x^{2} \sqrt[3]{y^{3}}\right)=A \log _{3} x+B \log _{3} y$ then
$A=$ $\qquad$
$B=$ $\qquad$
31. Determine whether the equation is true or false. Assume all variables represent positive real numbers.

$$
\ln (x+7)=\ln (x)+(7)
$$

Choose the correct answer below.
A. _The equation is true.
B. _The equation is false.
32. Identify the domain of the following functions:
a) $f(x)=\log (-6 x-8)$

Domain: $\qquad$
b) $f(x)=\ln (5 x-9)$

Domain: $\qquad$
c) $f(x)=\log _{8}(3 x+8)$

Domain: $\qquad$
33. Determine the domain of the function $h(x)=\log _{3}(x-5)$.

What is the domain of $h(x)$ ?
(Type your answer in interval notation. Two lowercase "oo" will make the infinity symbol " $\infty$ ".)
This is standard American interval notation:

$$
\begin{array}{ll}
\text { Inequality } & \text { Interval Notation } \\
x<-5 & (-\infty,-5) \\
x \leq-5 & (-\infty,-5] \\
x>-5 & (-5, \infty) \\
x \geq-5 & {[-5, \infty)} \\
-5<x \leq 0 & (-5,0]
\end{array}
$$

34. Graph the Exponential Function $y=\log _{3}(x)$ by plotting the $x$-intercept and one other point.


Practice-Prep for Highline College Math Placement Test/WAMAP: Test 3
35. Select the graph that represents the function $g(x)=5^{x+5}$.
A.

A.

A.

A.

B. What is the range of $g(x)=5^{x+5}$ ? $\qquad$
(Type your answer in interval notation. Two lowercase "oo" will make the infinity symbol " $\infty$ ".)
This is standard American interval notation:

$$
\begin{array}{ll}
\text { Inequality } & \text { Interval Notation } \\
x<-5 & (-\infty,-5) \\
x \leq-5 & (-\infty,-5] \\
x>-5 & (-5, \infty) \\
x \geq-5 & {[-5, \infty)} \\
-5<x \leq 0 & (-5,0]
\end{array}
$$

36. Write the domain of the function in interval notation. (Hint: You may want to consider the graph of the function to aid you.)

$$
f(x)=\sqrt{x-8}
$$

What is the domain of $f(x)$ ? $\qquad$ (in interval notation)

This is standard American interval notation:

$$
\begin{array}{ll}
\text { Inequality } & \text { Interval Notation } \\
x<-5 & (-\infty,-5) \\
x \leq-5 & (-\infty,-5] \\
x>-5 & (-5, \infty) \\
x \geq-5 & {[-5, \infty)} \\
-5<x \leq 0 & (-5,0]
\end{array}
$$

37. Given the function

$$
f(x)= \begin{cases}8 x-10 & x<0 \\ 8 x-20 & x \geq 0\end{cases}
$$

Calculate the following values:
$f(-1)=$ $\qquad$
$f(0)=$
$f(2)=$ $\qquad$
38. Rewrite $(x-2)^{2}$ as an equivalent expression without parentheses.
39. Perform the indicated operation.
$\frac{11}{x-2}-\frac{6}{x}=$ $\qquad$
(For answer, simplify numerator, but write denominator in factored form.)
40. Given the function $f(x)=4 x+2$ evaluate $f(5 x+5)$.
$f(5 x+5)=$ $\qquad$ (Simplify your answer.)


## Key - Form 1

1. $(x+1)(x-6)$
2. $(3 \cdot x-7) \cdot(3 \cdot x+7)$
3. $(x+2)(3 x+4)$
4. $(5 x+8 y)(5 x-8 y) \sim D N E$
5. The expression $5 a^{2}+19 a+12$ factors to $[\mathrm{AB} 1] \sim(5 a+4)(a+3)$
6. The expression does not factor to two real binomials. ~
7. $-1,-7$
8. $-5,-14$
9. $\frac{1+\sqrt{10}}{2}, \frac{1-\sqrt{10}}{2}$
10. $0.73205080756888 \sim-2.7320508075689$
11. $0, \frac{7}{24}$
12. $9 w^{2}+12 w+4$
13. $\frac{81 a^{8}}{b^{8} c^{12}}$
14. $\frac{x^{15}}{y^{21}}$
15. $\frac{c^{6}}{4}$
16. A. $y^{m}$ where $m=[\mathrm{AB} 1] \sim 8 \sim$
17. $\frac{4}{x-6}$
18. $\frac{16 x-15}{(x-5)^{2}}$
19. $\frac{b-6}{b-8}$
20. $-\frac{3}{4}$
21. $x=3 \sim x=8$
22. $12 \sqrt{6 y}+8 \sqrt{5 y}$
23. $x \cdot y \cdot \sqrt[5]{x \cdot y^{2}}$
24. 390625
25. $\frac{6}{7}$
26. -1.0986122886681
27. 0.71222489396373
28. $-5 \sim 2 \sim .5$
29. $4 \cdot \log (x)+2 \cdot \log (y)-\log (z)$
30. $2 \sim 1$
31. The equation is false.
32. $\left(-\infty,-\frac{4}{3}\right) \sim\left(\frac{9}{5}, \infty\right) \sim\left(-\frac{8}{3}, \infty\right)$
33. $(+5, \infty)$
34. 


35.

36. $[8,00$ )
37. $-18 \sim-20 \sim-4$
38. $x^{2}-4 x+4$
39. $\frac{5 x+12}{x(x-2)}$
40. $20 x+22$

These practice packets should NOT be taken more than once. Instead, use them to target specific areas that need further work and access more practice questions online with WAMAP

