Rational Practice & Review Name_____

Due By the End of the Period -- Counts as 2 daily Grades

Period____

Simplify each and state the excluded values.

1) $\frac{p+7}{8p^2+56p}$

2) $\frac{18x^2+12x}{18x^3}$

3) $\frac{10m^2+10m}{m+1}$

4) $\frac{n+6}{n^2+14n+48}$

5) $\frac{14b+14}{70b}$

6) $\frac{r+5}{r^2+4r-5}$

7) $\frac{45x-81}{27}$

8) $\frac{70n^2+80n}{30n^2}$

9) $\frac{a^2-14a+48}{9a-72} \cdot \frac{a-10}{a-6}$

10) $\frac{1}{20v^2} \cdot \frac{6v-12}{v-2}$

11) $\frac{30x+18}{4} \cdot \frac{6x}{30x+18}$

12) $\frac{9x-63}{x-7} \cdot \frac{1}{x-8}$

Simplify each expression.

13) $\frac{2}{6y}+\frac{4}{2}$

14) $\frac{4y}{6x}-\frac{6x}{5x}$

15) $\frac{n+2}{3n^2-15n}-\frac{2n-4}{3}$

16) $\frac{3}{x+4}-\frac{3x}{x-2}$

17) $4+\frac{6p}{9p^3+3p^2}$

18) $\frac{4m}{5m+6}+\frac{5m}{m-3}$

Factor each completely.

19) $5a^4 + 10a^2 - 315$

20) $a^4 - 18a^2 + 80$

21) $x^4 - 3x^2 - 4$

22) $5x^4 + 10x^2 - 175$

23) $x^4 + 4x^2 - 32$

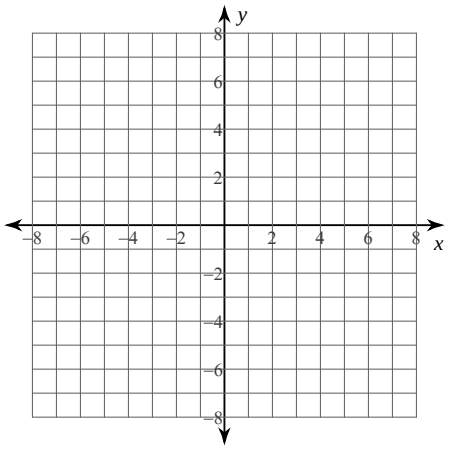
24) $5m^4 + 35m^2 - 40$

25) $m^4 - 5m^2 + 6$

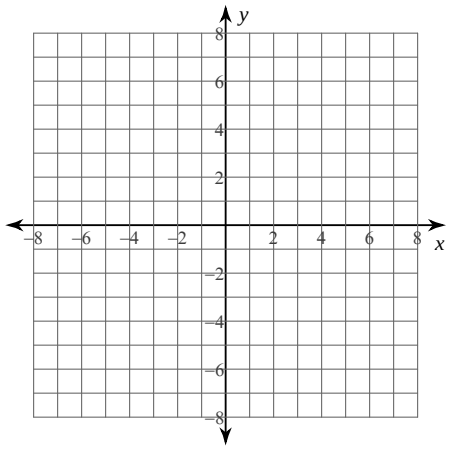
26) $x^4 + x^2 - 2$

Identify the domain and range of each. Then sketch the graph.

27) $y = \log_4 (x - 3) + 3$



28) $y = \log_4 (x + 4) + 3$



Describe the end behavior of each function.

29) $f(x) = x^3 - 3x^2 - 1$

A) $f(x) \to -\infty$ as $x \to -\infty$
$f(x) \to +\infty$ as $x \to +\infty$

B) $f(x) \to +\infty$ as $x \to -\infty$
$f(x) \to +\infty$ as $x \to +\infty$

C) $f(x) \to +\infty$ as $x \to -\infty$
$f(x) \to -\infty$ as $x \to +\infty$

D) $f(x) \to -\infty$ as $x \to -\infty$
$f(x) \to -\infty$ as $x \to +\infty$

30) $f(x) = -x^2 + 4x - 2$

A) $f(x) \to +\infty$ as $x \to -\infty$
$f(x) \to -\infty$ as $x \to +\infty$

B) $f(x) \to -\infty$ as $x \to -\infty$
$f(x) \to +\infty$ as $x \to +\infty$

C) $f(x) \to +\infty$ as $x \to -\infty$
$f(x) \to +\infty$ as $x \to +\infty$

D) $f(x) \to -\infty$ as $x \to -\infty$
$f(x) \to -\infty$ as $x \to +\infty$

Find all zeros.

31) $f(x) = 3x^3 - 13x^2 + 13x - 3$

32) $f(x) = 15x^5 - 10x^4 + 129x^3 - 86x^2 + 168x - 112$

Rational Practice & Review Name_____

Due By the End of the Period -- Counts as 2 daily Grades

Period____

Simplify each and state the excluded values.

1) $\frac{p+7}{8p^2+56p}$ $\frac{1}{8p}$; $\{0, -7\}$

2) $\frac{18x^2+12x}{18x^3}$ $\frac{3x+2}{3x^2}$; $\{0\}$

3) $\frac{10m^2+10m}{m+1}$

$10m$; $\{-1\}$

4) $\frac{n+6}{n^2+14n+48}$ $\frac{1}{n+8}$; $\{-6, -8\}$

5) $\frac{14b+14}{70b}$ $\frac{b+1}{5b}$; $\{0\}$

6) $\frac{r+5}{r^2+4r-5}$ $\frac{1}{r-1}$; $\{-5, 1\}$

7) $\frac{45x-81}{27}$ $\frac{5x-9}{3}$; No excluded values.

8) $\frac{70n^2+80n}{30n^2}$ $\frac{7n+8}{3n}$; $\{0\}$

9) $\frac{a^2-14a+48}{9a-72} \cdot \frac{a-10}{a-6}$ $\frac{a-10}{9}$; $\{8, 6\}$

10) $\frac{1}{20v^2} \cdot \frac{6v-12}{v-2}$ $\frac{3}{10v^2}$; $\{0, 2\}$

11) $\frac{30x+18}{4} \cdot \frac{6x}{30x+18}$ $\frac{3x}{2}$; $\left\{-\frac{3}{5}\right\}$

12) $\frac{9x-63}{x-7} \cdot \frac{1}{x-8}$ $\frac{9}{x-8}$; $\{7, 8\}$

Simplify each expression.

13) $\frac{2}{6y}+\frac{4}{2}$ $\frac{6y+1}{3y}$

14) $\frac{4y}{6x}-\frac{6x}{5x}$ $\frac{10y-18x}{15x}$

15) $\frac{n+2}{3n^2-15n}-\frac{2n-4}{3}$ $\frac{-19n+2-2n^3+14n^2}{3n(n-5)}$

16) $\frac{3}{x+4}-\frac{3x}{x-2}$ $\frac{-6-9x-3x^2}{(x+4)(x-2)}$

17) $4+\frac{6p}{9p^3+3p^2}$ $\frac{12p^2+4p+2}{p(3p+1)}$

18) $\frac{4m}{5m+6}+\frac{5m}{m-3}$

$\frac{29m^2+18m}{(5m+6)(m-3)}$

Factor each completely.

19) $5a^4 + 10a^2 - 315$

$5(a^2 - 7)(a^2 + 9)$

20) $a^4 - 18a^2 + 80$

$(a^2 - 10)(a^2 - 8)$

21) $x^4 - 3x^2 - 4$

$(x^2 + 1)(x + 2)(x - 2)$

22) $5x^4 + 10x^2 - 175$

$5(x^2 - 5)(x^2 + 7)$

23) $x^4 + 4x^2 - 32$

$(x + 2)(x - 2)(x^2 + 8)$

24) $5m^4 + 35m^2 - 40$

$5(m + 1)(m - 1)(m^2 + 8)$

25) $m^4 - 5m^2 + 6$

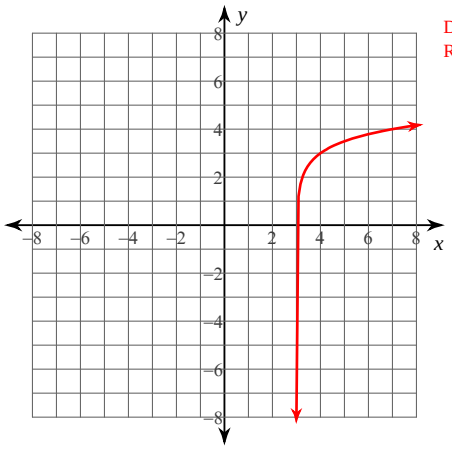
$(m^2 - 3)(m^2 - 2)$

26) $x^4 + x^2 - 2$

$(x^2 + 2)(x + 1)(x - 1)$

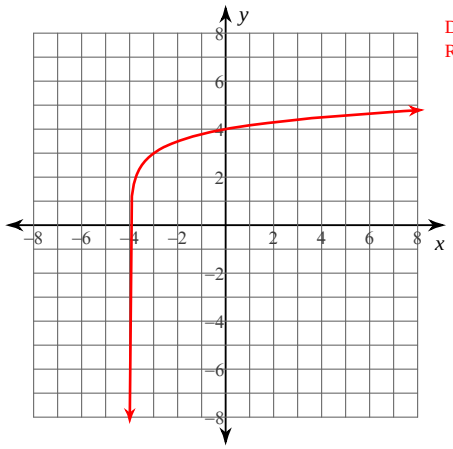
Identify the domain and range of each. Then sketch the graph.

27) $y = \log_4 (x - 3) + 3$



Domain: $x > 3$
Range: All reals

28) $y = \log_4 (x + 4) + 3$



Domain: $x > -4$
Range: All reals

Describe the end behavior of each function.

29) $f(x) = x^3 - 3x^2 - 1$

*A) $f(x) \to -\infty$ as $x \to -\infty$
$f(x) \to +\infty$ as $x \to +\infty$

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*D) $f(x) \to -\infty$ as $x \to -\infty$
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Find all zeros.

31) $f(x) = 3x^3 - 13x^2 + 13x - 3$ $\left\{3, 1, \frac{1}{3}\right\}$

32) $f(x) = 15x^5 - 10x^4 + 129x^3 - 86x^2 + 168x - 112$ $\left\{\frac{2}{3}, \frac{2i\sqrt{10}}{5}, -\frac{2i\sqrt{10}}{5}, i\sqrt{7}, -i\sqrt{7}\right\}$