Pre-Calculus II Name_____

Chapter 5 Review

Date_____ Period____

Simplify each expression.

1) $\dfrac{6}{2a-5}+\dfrac{4a}{a-2}$

2) $\dfrac{2}{k+6}-\dfrac{6}{10k-10}$

3) $\dfrac{\dfrac{u^2}{25}-\dfrac{u}{15}}{\dfrac{u}{25}+\dfrac{3}{5}}$

4) $\dfrac{\dfrac{1}{4}-\dfrac{x-5}{x}}{\dfrac{1}{2}-\dfrac{4}{x}}$

5) $\dfrac{18n+36}{18n^2+36n}\cdot\dfrac{6n+42}{6}$

6) $\dfrac{m+10}{m^2+20m+100}\div\dfrac{m^2-13m+40}{m^2-m-20}$

7) $\dfrac{3b^2-27b-30}{5b^3-58b^2+80b}$

8) $\dfrac{7n^3-7n^2-42n}{4n^2-4n-24}$

9) $\dfrac{\sqrt{2n^4}}{\sqrt{5n^3}}$

10) $\dfrac{2\sqrt{8a^3b^4}}{\sqrt{6a^2b^3}}$

11) $\dfrac{\sqrt{5}+4}{3\sqrt{5}-\sqrt{3}}$

12) $\dfrac{3-\sqrt{2}}{\sqrt{3}+5}$

Solve each equation. Remember to check for extraneous solutions.

13) $1+\frac{1}{4x}=\frac{x+3}{4x}$

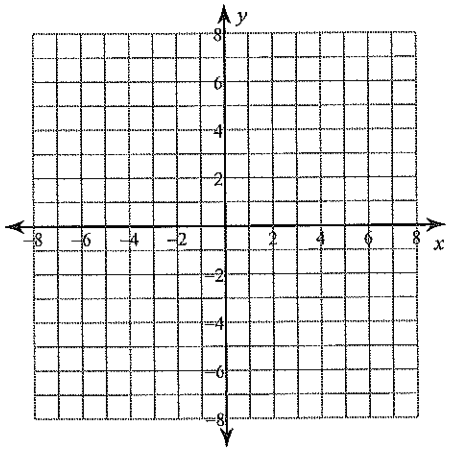
14) $\frac{4}{r^2+11r+30}=\frac{6}{r^2+11r+30}+\frac{1}{r+6}$

15) $\frac{3n+9}{n^2+2n}-\frac{1}{n^2+2n}=\frac{1}{n^2+8n+12}$

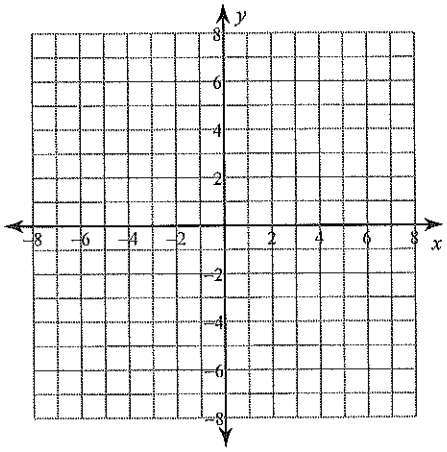
16) $\frac{1}{a}=\frac{3a+12}{a}+\frac{6a+6}{a^2-a}$

Identify the points of discontinuity, holes, vertical asymptotes, x-intercepts, and horizontal or slant asymptote of each. Then sketch the graph.

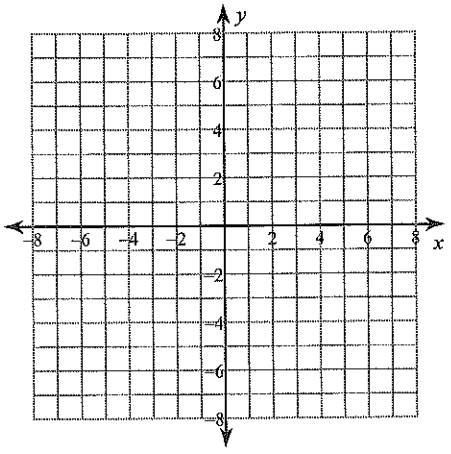
17) $f(x)=\frac{1}{-x^2+x+6}$



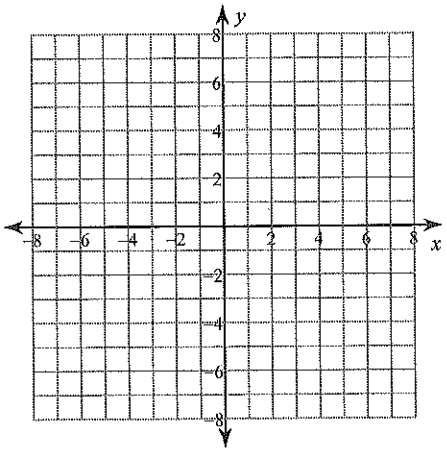
18) $f(x)=\frac{x-2}{x+1}$



19) $f(x)=\frac{3x-12}{x-3}$



20) $f(x)=\frac{x^3-x}{4x^2-16}$



21) An Air Force plane left Paris and flew toward the maintenance facility. One hour later a cargo plane left flying 42 mph faster in an effort to catch up to it. After four hours the cargo plane finally caught up. What was the Air Force plane's average speed?

22) Rob traveled to the lake and back. It took one hour less time to get there than it did to get back. The average speed on the trip there was 45 mph. The average speed on the way back was 30 mph. How many hours did the trip there take?

23) Shayna left school and traveled toward her cabin on the lake at an average speed of 30 km/h. Some time later Jessica left traveling in the same direction but at an average speed of 45 km/h. After traveling for two hours Jessica caught up with Shayna. How long did Shayna travel before Jessica caught up?

24) A passenger plane flew to the maintenance facility and back. On the trip there it flew 430 km/h and on the return trip it went 172 km/h. How long did the trip there take if the return trip took five hours?

Solve each question. Round your answer to the nearest hundredth.

25) Working together, Danielle and Shayna can clean an attic in 6.24 hours. Had she done it alone it would have taken Shayna 12 hours. Find how long it would take Danielle to do it alone.

26) Kim can sweep a porch in 12 minutes. One day her friend James helped her and it only took 5.14 minutes. Find how long it would take James to do it alone.

27) Working together, Jose and Sumalee can mop a warehouse in 4.8 hours. Had she done it alone it would have taken Sumalee 8 hours. Find how long it would take Jose to do it alone.

28) Working together, Beth and Jenny can harvest a field in 5.24 hours. Had she done it alone it would have taken Jenny 10 hours. How long would it take Beth to do it alone?

Answers to Chapter 5 Review

1) $\dfrac{-14a-12+8a^2}{(2a-5)(a-2)}$

2) $\dfrac{7k-28}{5(k+6)(k-1)}$

3) $\dfrac{3u^2-5u}{3u+45}$

4) $\dfrac{-3x+20}{2x-16}$

5) $\dfrac{n+7}{n}$

6) $\dfrac{m+4}{(m+10)(m-8)}$

7) $\dfrac{3(b+1)}{b(5b-8)}$

8) $\dfrac{7n}{4}$

9) $\dfrac{\sqrt{10n}}{5}$

10) $\dfrac{4\sqrt{3ab}}{3}$

11) $\dfrac{15+\sqrt{15}+12\sqrt{5}+4\sqrt{3}}{42}$

12) $\dfrac{-3\sqrt{3}+15+\sqrt{6}-5\sqrt{2}}{22}$

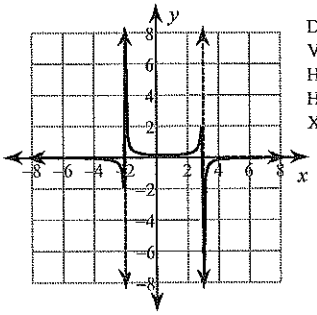
13) $\left\{\dfrac{2}{3}\right\}$

14) $\{-7\}$

15) $\left\{-\dfrac{16}{3}, -3\right\}$

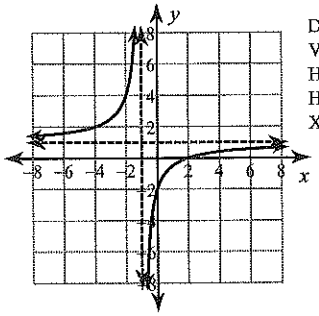
16) $\left\{-5, \dfrac{1}{3}\right\}$

17)



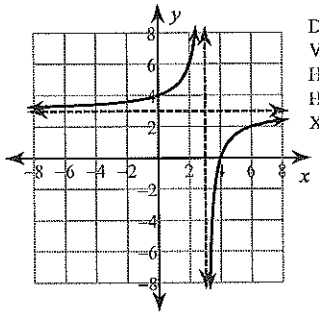
Discontinuities: 3, –2
Vertical Asym.: $x = 3$, $x = -2$
Holes: None
Horz. Asym.: $y = 0$
X-intercepts: None

18)



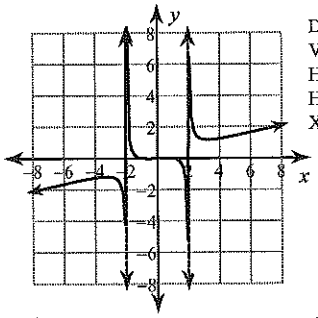
Discontinuities: –1
Vertical Asym.: $x = -1$
Holes: None
Horz. Asym.: $y = 1$
X-intercepts: 2

19)



Discontinuities: 3
Vertical Asym.: $x = 3$
Holes: None
Horz. Asym.: $y = 3$
X-intercepts: 4

20)



Discontinuities: –2, 2
Vertical Asym.: $x = -2$, $x = 2$
Holes: None
Horz. Asym.: None
X-intercepts: 0, –1, 1

21) 168 mph

22) 2 hours

23) 3 hours

24) 2 hours

25) 13 hours

26) 8.99 minutes

27) 12 hours

28) 11.01 hours