Answer Key Math 71 Review

Question 1 Answers

a) $\dfrac{27x^6}{125y^{12}}$

b) $\dfrac{x^{11}}{8y^{30}}$

c) $5a^2c\sqrt{2ab}$

d) $3x^3\sqrt[3]{4x^2}$

e) $\sqrt[15]{x^{11}}$

f) $y\sqrt{5x}$

g) $26x\sqrt[3]{x^2y^2}$

h) -30

i) $39-80i$

j) $1+i$

k) $\dfrac{2x^2-5x-3}{x^2+x+2}$

l) $\dfrac{5b+3a}{4b-2a}$

m) $\dfrac{x^2-12x+27}{x^2+11x+18}$

n) $2a^2b^4$

o) $\dfrac{y^2+2y-46}{y^2-3y-10}$

p) $\dfrac{x+y}{4xy}$

q) $8\sqrt[5]{x^3}$

r) $32\sqrt[15]{x^2}$

s) $\sqrt{21}+\sqrt{14}$

t) $\dfrac{2\sqrt{10x}}{5x}$

Question 2 Answers

a) $3ab\left(2a^2-3b^2\right)\left(4a^4+6a^2b^2+9b^4\right)$

b) $(3x+1)(8x-5)$

c) $(y-4+9x)(y-4-9x)$

d) $(b-d)(2a+c)$

e) $(x+3)(x-3)\left(x^2+9\right)$

f) $(x-6)(x-2)$

g) $(x-1)(x+3)(x-3)\left(x^2+x+1\right)$

h) $(x+5)(x-5)(x-9)$

i) $8\left(x^2+2y^5\right)\left(x^4-2x^2y^5+4y^{10}\right)$

j) $3y(2x+5)(3x-7)$

Question 3 Answers

a) $\{\emptyset\}$	b) $\dfrac{2}{3}$	c) $\left\{\dfrac{2\pm i\sqrt{2}}{2}\right\}$	d) -13	e) $\left\{\dfrac{5}{7}, -\dfrac{3}{2}\right\}$
f) $\{\pm 1, \pm 2\}$	g) $\{3\pm\sqrt{6}\}$	h) $\{0, 2\}$	i) $[-14, 22]$	j) $(-\infty, 0)\cup(3,\infty)$
k) $\dfrac{\ln 7}{\ln 4}$	l) $\dfrac{3}{5}$	m) $\dfrac{2\ln 3}{\ln 3 - 2\ln 5}$	n) $\dfrac{100}{199}$	o) 2
p) 5				

Question 4 Answers

a) $x^4 - 4x^3 + 12x^2 - 33x + 99 + \dfrac{1}{x+3}$ b) $4x^3 + 8x^2 + x + 2$

Question 5 Answers

a) $\{x \mid x \text{ is a real number}\}$ b) $\{\emptyset\}$ c) $\{\emptyset\}$

d) $\{x \mid x \text{ is real numbers and } x \neq 2\}$ e) $\{2\}$ f) $\{3\}$

Question 6 Answers

a) $(-\infty, 2)$ b) $(-1, 2)\cup(5, \infty)$

Question 7 Answers

a) $(7,0)$

b) $\{\emptyset\}$

c) $(3,2)(3,-2)(-3,2)(-3,-2)$

d) $\{x \mid x \text{ is a real number}\}$

e) $(0,-2,3)$

f) $(3,-2,1)$

Question 8 Answers

a) $= x^2 - 3x + 5$

b) $= x^2 - 9x + 13$

c) $= 2x + h - 6$

d) $= \dfrac{x^2 - 6x + 9}{3x - 4}$ $\left\{x \mid x \text{ is a real numbers and } x \neq \dfrac{4}{3}\right\}$

e) $= 9x^2 - 42x + 49$

f) $= 3x^3 - 22x^2 + 51x - 36$

g) $= 324$

h) $= (x-4)^2 + 3$

Question 9 Answers

a) $\{x \mid x \text{ is a real number}\}$

b) $(-\infty, -2] \cup [3, \infty)$

c) $\left[\dfrac{2}{3}, \infty\right)$

d) $\left(-\infty, \dfrac{7}{2}\right)$

e) $\left[\dfrac{5}{2}, \infty\right)$

f) $\{x \mid x \neq -12 \text{ or } x \neq 2\}$

Question 10 Answers

a) $R = \dfrac{R_1 R_2}{R_1 + R_2}$

b) $f_2 = \dfrac{f f_1}{f_1 - f}$

c) $\sqrt{\dfrac{A - 3\pi R^2}{3\pi}}$

d) $F = \dfrac{9}{5}C + 32$

Question 11 Answer $243x^5 - 810x^4 y + 1080x^3 y^2 - 720x^2 y^3 + 240xy^4 - 32y^5$

Question 12 – 17 Answers

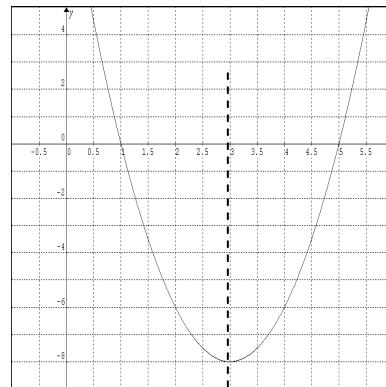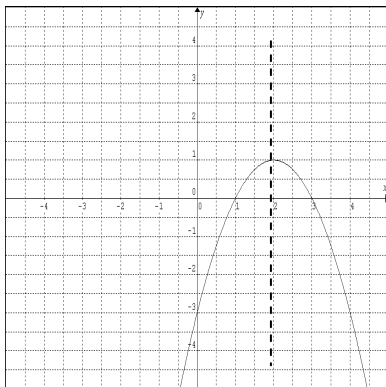a) $-5280\, x^4 y^7$

b) $-14784\, x^6 y^5$

c) 4851

d) 6435

e) $\dfrac{1}{n}$

f) $(n+3)(n+2)$

g) $\displaystyle\sum_{k=1}^{5}\dfrac{1}{k^2}$

h) $\displaystyle\sum_{k=0}^{19}(3k+2)$

i) $\dfrac{1}{3}$

j) $\dfrac{5}{7}$

k) $\dfrac{21}{23}$

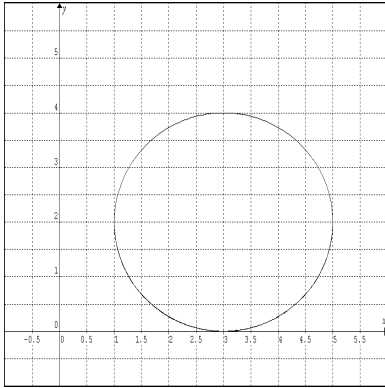l) $\dfrac{41}{43}$

m) 58

n) 21

o) 36

p) $-\dfrac{39}{8}$

Question 18 Answers

I. a) $(7,0)$ b) $x = 2$ c) $(1,0)$ $(3,0)$ d) $(0,-3)$ **II.** a) $(3,-8)$ b) $x = 3$ c) $(1,0)$ $(5,0)$ d) $(0,10)$

Question 19 Answers

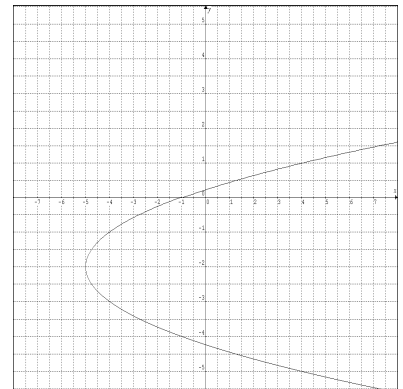a) $(x-3)^2 + (y-2)^2 = 4$ Circle centered at $(3,2)$

b) $\dfrac{x^2}{16} - \dfrac{y^2}{25} = 1$ Hyperbola

c) $\dfrac{x^2}{9} + \dfrac{y^2}{4} = 1$ Ellipse
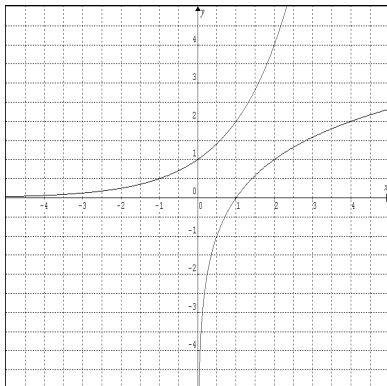

d) $x = (y+2)^2 - 5$ Parabola

Question 20 Answers

y_1 intercept $(0,1)$ asymptote $y = 0$
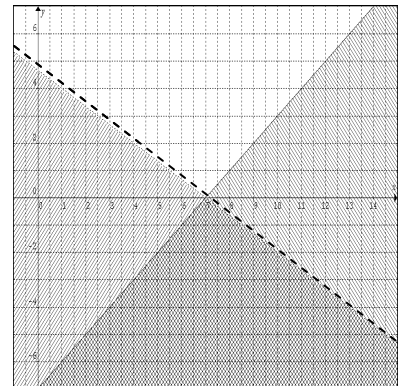
y_2 intercept $(1,0)$ asymptote $x = 0$

$$y_1 = 2^x$$

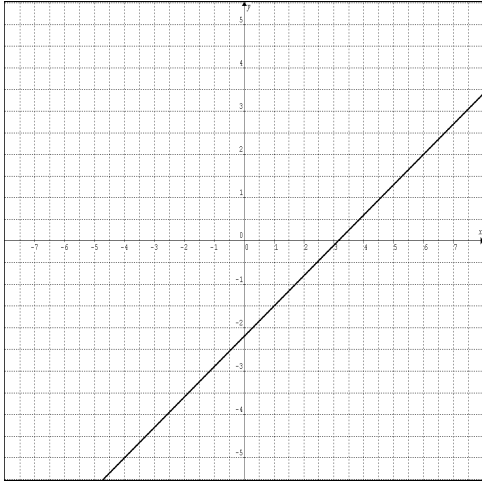$$y_2 = \log_2 x$$

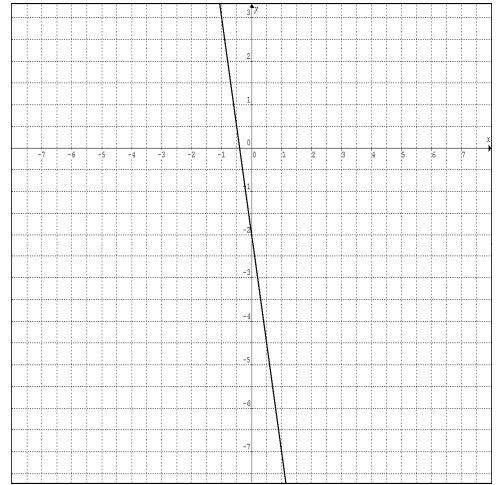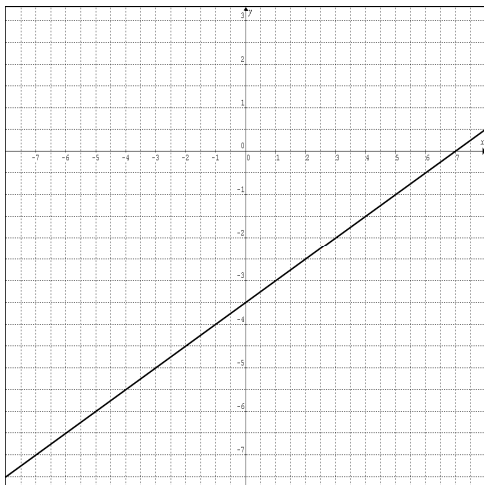**Question 21** Answer

The solution is the darkest shaded region

Question 22 Answers

a)

b)

Question 23 Answers

a)

b)