College Algebra Final Exam Review

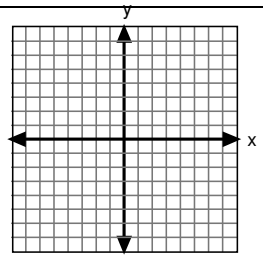
	#	Question
Chapter 2	1	Two cars leave at the same time from towns that are 180 miles apart, traveling toward each other. One car travels 10 mph faster than the other. They meet each other after two hours. Find the speed of the faster car. a. 40 mph b. 50 mph c. 60 mph d. 75mph
	2	Two cars leave from the same point at the same time, traveling in opposite directions. Car B travels at 25 mph slower than the car A. After 6 hours, they are 630 miles apart. Find the speed of the slower car. a. 40 b. 45 c. 60 d. 65
	3	Solve $\frac{x+8}{6} = \frac{2x+12}{9} - \frac{4x}{9}$ a. 1 b. 0 c. $\frac{4}{3}$ d. $-\frac{48}{17}$
	4	Solve $\frac{2x-3}{7} + \frac{3}{7} = \frac{-x}{3}$ a. 7 b. 6 c. $\frac{3}{2}$ d. 0
	5	Solve -9x – (4 + 3x) = -(2x – 1) + 25 a. -2 b. -3 c. $\frac{-7}{2}$ d. $\frac{-14}{5}$
Chapter 3	6	What is the domain and range of the function? $f(x) = \sqrt{2x+3}$ a. Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$ b. Domain: $\left(-\frac{3}{2}, \infty\right)$ Range: $(0, \infty)$ c. Domain: $\left[-\frac{3}{2}, \infty\right)$ Range: $[0, \infty)$ d. Domain: $(-\infty, \infty)$ Range: $[0, \infty)$
	7	What is the domain and range of the function? $f(x) = \sqrt{2-x}$ a. Domain: $(2, \infty)$ Range: $(0, \infty)$ b. Domain: $(-\infty, 2)$ Range: $(0, \infty)$ c. Domain: $(-\infty, 2]$ Range: $[0, \infty)$ d. Domain: $[2, \infty)$ Range: $[0, \infty)$
	8	What is the domain and range of the function? $f(x) = \sqrt{x^2-16}$ a. Domain: $(-\infty, -4] \cup [4, \infty)$ Range: $[0, \infty)$ b. Domain: $(-\infty, -4) \cup (4, \infty)$ Range: $(0, \infty)$ c. Domain: $[-4,4]$ Range: $[0,4]$ d. Domain: $(-4,4)$ Range: $(0,4)$

	9	Determine whether each pair of lines is parallel, perpendicular, or neither. $2x + y = 3$ and $y = 4 - 2x$ a. parallel b. perpendicular c. neither
	10	Determine whether each pair of lines is parallel, perpendicular, or neither. $x + 4y = 8$ and $4x + y = 8$ a. parallel b. perpendicular c. neither
Chapter 4	**11**	Solve the system for y. $\begin{cases} x+2y+z=1 \\ 2x+y-z=11 \\ -x+y+z=-6 \end{cases}$ A. y = 3 B. y = 1 C. y = -4 D. y = -2
	12	Solve. $\begin{cases} x-2y+z=-4 \\ 2x \quad -z=1 \\ -x-2y+2z=5 \end{cases}$ A. (1, 3, 1) B. (3, 6, 5) C. Infinitely many solutions D. No solution
	13	Two cars pass each other going in opposite directions. The first car is traveling 15 mph faster than the other. In two hours they are 210 miles apart. What is the speed of the faster car? A. 45 mph B. 55 mph C. 60 mph D. 65 mph
	14	The perimeter of a triangle is 155 inches. The first side is 20 inches shorter than the second, and the second side is 5 inches longer than the third side. Find the length of the longest side. A. 40 inches C. 60 inches B. 55 inches D. 75 inches
	15	Amanda has $547 in ten-dollar, five-dollar, and one-dollar bills. There were 91 bills in all, and 10 more five-dollar bills than ten-dollar bills. How many one-dollar bills does Amanda have? A. 17 C. 42 B. 32 D. 51
Chapter 5	16	Simplify . $\left(\frac{5}{4}\right)^{-3}\left(\frac{5}{4}\right)^{-2}\left(\frac{5}{4}\right)^{2}$ A. $\left(\frac{4}{5}\right)^{3}$ C. $\left(\frac{4}{5}\right)^{7}$ B. $\left(\frac{4}{5}\right)^{10}$ D. $\left(\frac{5}{4}\right)^{3}$

	17	Simplify. $(2r-3s)^2$ A. $4r^2-9s^2$ C. $4r^2-12rs+9s^2$ B. $4r^2+9s^2$ D. $4r^2-6rs+9s^2$
	18	Simplify. $[4y-(5z+1)][4y+(5z+1)]$ A. $16y^2-25z^2-10z-1$ B. $16y^2+25z^2-10z-1$ C. $16y^2-25z^2+10z+1$ D. $16y^2+25z^2+10z-1$
	19	If f(x) = x^2 + 3x – 2 and g(x) = x + 2, find $(f \circ g)(x)$. A. x^2 + 3x C. x^2 + 7x +8 B. x^2 + 3x – 8 D. x^3 + x^2 – 8 x + 4
	20	Simplify. $\left(-5c^{-3}d^2\right)^3\left(7c^{-3}d^{-8}\right)^0$ A. $\frac{-125}{7c^9d^6}$ C. $\frac{-875}{c^{12}d^{12}}$ B. $\frac{-125d^6}{c^9}$ D. 0
Chapter 6	21	Factor $6r^3t-30r^2t^2+18rt^3$
	22	Factor $10m^2+37m+30$
	23	Factor $2k^4-5k^2-3$
	24	Solve $q^2+2q=8$
	25	Find the zeros $f(x)=2x^3-6x^2-8x+24$
Chapter 7	26	Multiply $\frac{z^2-z-6}{z-6}\cdot\frac{z^2-6z}{z^2+2z-15}$
	27	Add $\frac{2}{m^2-4m+4}+\frac{3}{m^2+m-6}$

	28	Solve $\frac{6}{5x}+\frac{8}{45}=\frac{2}{3x}$
	29	Solve $\frac{5}{p^2+3p+2}-\frac{3}{p^2-4}=\frac{1}{p^2-p-2}$
	30	Solve for x $y=\frac{x+z}{a-x}$
Chapter 8	31	Solve $\sqrt[3]{3x+9}=\sqrt[3]{8x-11}$ a) $x=\frac{-2}{11}$ b) $x=-1.24$ c) $x=2$ d) $x=4$
	32	Solve $\sqrt{5x-4}-9=0$ a) x = 17 b) $x=\frac{7}{5}$ c) $x=\frac{-1}{5}$ d) No Solution
	33	Simplify $\sqrt[3]{\frac{x^{11}}{3y^5}}$ a) Prime b) $\frac{x^5\sqrt[3]{3xy}}{3y^3}$ c) $\frac{x^3\sqrt[3]{9x^2y}}{3y^2}$ d) $\frac{x^3\sqrt[3]{3x^2y^5}}{3y^5}$
	34	Simplify $\frac{x^{\frac{1}{2}}\cdot x^{\frac{3}{5}}}{x^{\frac{2}{5}}}$ a) $\sqrt{x^7}$ b) $\sqrt[10]{x^{15}}$ c) $\sqrt[7]{x^{10}}$ d) $\sqrt[10]{x^7}$

	35	Find the domain and the range of the following $f(x) = \sqrt{x-4}$ a) Domain $[-4,\infty)$ Range $[0,\infty)$ b) Domain $[4,\infty)$ Range $[0,\infty)$ c) Domain $[0,\infty)$ Range $[-4,\infty)$ d) Domain $[0,\infty)$ Range $[4,\infty)$
Chapter 9	36	Solve the following equation: $(x+4)^2 = 49$ a) x = -11 b) x = 3 c) x = 11 d) x = 3, -11
	37	Solve. $x^2 - 12x + 4 = 0$ a) $x = 6 \pm 4\sqrt{2}$ b) $x = 6 \pm 2\sqrt{10}$ c) $x = -6, 2$ d) $x = 12 \pm 8\sqrt{2}$
	38	Solve the following equation: $(2x-3)^2 = 225$ a) x = 9 b) x = 9, -6 c) x = -6 a) x = 9, 6
	39	Solve. $5 + \frac{6}{m+1} = \frac{14}{m}$ a) $x = \frac{3 \pm i\sqrt{271}}{10}$ b) $x = 1, \frac{-3}{5}$ c) $x = 2, \frac{-7}{5}$ d) $x = 10, -7$
	40	Solve the quadratic by completing the square. $3x^2 + 4x - 1 = 0$ a) $x = \frac{-2}{3} \pm \frac{\sqrt{7}}{3}$ b) $x = -2 \pm \frac{\sqrt{15}}{3}$ c) $x = \frac{-1}{3}, -1$ d) $x = \pm \frac{\sqrt{37}}{3}$
Chapter 10	41	Graph the following and determine where the function is increasing, decreasing, or constant. $f(x) = -x^3 + 3x^2 + 3$
	42	Evaluate at the following *f(– 3) and f(4)*: $f(x) = \begin{cases} 2x-1 & \text{if } x > 2 \\ -x^2 + 4 & \text{if } x \le 2 \end{cases}$
	43	Find the vertex of the following: $y = x^2 - 4x + 5$

	44	Graph the following piecewise function: $f(x)=\begin{cases}-2x+4 & if\ x>-1\\ x^2+4x+7 & if\ x\le -1\end{cases}$ 
	45	Let $f(x)=3x^2-2x \ \ and \ \ g(x)=x-4$ $find\ (f\circ g)(x)$
Chapter 11	46	Condense into a single logarithm: $\frac{1}{2}\log_2 x+3\log_2(y-3)-\frac{2}{3}\log_2 z$
	47	Describe the transformation: $f(x)=-\log_5(x+3)-2$
	48	Solve: $\log(x^2-7)+\log 4=2$
	49	$3950 for 5 years at 7% compounded monthly
	50	Expand the following logarithm: $\log_7 \frac{\sqrt[4]{xy}}{2z^3}$
Chapter 12	51	Find the quotient when $4x^3 - 15x^2 + 11x - 6$ is divided by $x - 3$. A. $4x^2 + 3x + 2$ C. $4x^2 - x + 2$ B. $4x^2 + x + 2$ D. $4x^2 - 3x + 2$
	52	Find all rational zeros for the polynomial function defined by $P(x) = 6x^3 - 11x^2 - 4x + 4$. A. $\frac{-3}{4}, \frac{1}{2}, -2$ C. $\frac{-2}{3}, \frac{-1}{2}, 2$ B. $\frac{-2}{3}, \frac{1}{2}, 2$ D. $\frac{3}{4}, \frac{-1}{2}, -2$
	53	Which of the following is a zero of this polynomial? $P(x) = 3x^3 - 2x^2 - 10x + 4$ A. 2 C. 4 B. –2 D. –4
	54	Given the polynomial $f(x) = 15x^3 + 37x^2 + 12x - 4$, and one of its factors, $x + 2$, find the remaining factors. A. $(3x + 1)(5x - 1)$ B. $(3x + 2)(5x - 1)$ C. $(3x + 1)(5x + 1)$ D. $(3x - 2)(5x - 1)$
	55	A large percentage of automotive testing focuses on passenger safety. Suppose that the percent of automobiles found to be unsafe between 1979 and 1994 can be modeled by the function $f(x) = 0.046x^3 - 0.6x^2 + 2.57x + 9.25$ Where x = 0 corresponds to 1979, x =1 to 1980, and so on. If *f(x)* represents the percent, what percent corresponds to 1987? (Round to the nearest percent) A. 14% C. 16% B. 15% D. 17%

Answer Key for College Algebra Final Exam Review

B	**1**
A	**2**
B	**3**
D	**4**
B	**5**
C	**6**
C	**7**
A	**8**
A	**9**
C	**10**
B	**11**
D	**12**
C	**13**
C	**14**
A	**15**
A	16
C	17
A	18
C	19
B	20
$6rt\left(r^2-5rt+3t^2\right)$	21
$\left(2m+5\right)\left(5m+6\right)$	22
$\left(2k^2+1\right)\left(k^2-3\right)$	23
$\{-4,2\}$	24
$x=-2,2,3$	25
$\frac{z\left(z+2\right)}{z+5}$	26
$\frac{5m}{\left(m-2\right)^2\left(m+3\right)}$	27
$x=-3$	28
$x=15$	29
$x=\frac{ay-z}{1+y}$	30
D	31
A	32

C	33
D	34
B	35
D	36
A	37
B	38
C	39
A	40
Increasing: [0,2] Decreasing: $(-\infty,0]\cup[2,\infty)$	41
f(– 3) = – 5 *f(4)* = 7	42
Vertex: (2, 1)	43
GRAPH	44
$3x^2-26x+56$	45
$\log_2\frac{\sqrt{x}(y-3)^3}{\sqrt[3]{z^2}}$	46
Reflects over the x – axis, left 3 units, down two units	47
$x=\pm4\sqrt{2}$	48
$5,599.62	49
$\frac{1}{4}\log_7 x+\frac{1}{4}\log_7 y$ $-\log_7 2-3\log_7 z$	50
D	51
B	52
A	53
B	54
B	55