Algebra 2
Final Exam

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MATH

Algebra 2 Final Exam

This exam is comprehensive over the entire course and includes 12 questions. You have 60 minutes to complete the exam.

The exam is worth 100 points. The 8 multiple choice questions are worth 5 points each (40 points total) and the 4 free response questions are worth 15 points each (60 points total).

Mark your multiple choice answers on this cover page. For the free response questions, show your work and make sure to circle your final answer.

1. (5 pts)	A	B	C	D	E
2. (5 pts)	A	B	C	D	E
3. (5 pts)	A	B	C	D	E
4. (5 pts)	A	B	C	D	E
5. (5 pts)	A	B	C	D	E
6. (5 pts)	A	B	C	D	E
7. (5 pts)	A	B	C	D	E
8. (5 pts)	A	B	C	D	E

1. **(5 pts)** If you deposit $\$200$ into a savings account that earns $2\,\%$ simple interest annually, how much money will be in the account after 5 years?

A	$\$200$	C	$\$20$	E	$\$2{,}200$
B	$\$220$	D	$\$400$		

2. **(5 pts)** Simplify the expression.

$$\frac{y}{3x}+\frac{b}{yz^3}-\frac{c}{3y^2}$$

A $\dfrac{y+b-c}{x-yz^3}$

B $\dfrac{y^3z^3+3bxy-cxz^3}{3xy^2z^3}$

C $\dfrac{y+b-c}{3x+yz^3-3y^2}$

D $\dfrac{y^4z^3+3bxy^2-cxz^3}{3xy^2z^3}$

E $\dfrac{yb-c}{3xy^2z^3}$

3. **(5 pts)** Red R varies inversely to Blue B. If $R = 4$ when $B = 1$, what will the number of Blue be when $R = 2$?

A $\frac{1}{2}$

B 1

C 2

D 4

E 8

4. **(5 pts)** Solve $\sqrt{x^2 + 5x - 14} = x + 2$.

A $x = 14$

B $x = 10$

C $x = \frac{18}{5}$

D $x = 18$

E $x = -10$

5. **(5 pts)** Solve the system of equations.

$$2x + 3y - z = 17$$

$$3x - y + 2z = 11$$

$$x - 3y + 3z = -4$$

A	$(5,2,-1)$	C	$(-5,-2,1)$	E	$(-5,2,1)$
B	$(5,2,1)$	D	$(-5,-2,-1)$		

6. **(5 pts)** Factor $6x^2 - 11x + 4$.

A	$(6x-2)(x+1)$	C	$(3x+1)(2x+4)$	E	$(2x-1)(3x-4)$
B	$(6x+2)(x-1)$	D	$(2x-3)(3x-4)$		

7. **(5 pts)** Find the inverse function of $y = \sqrt{x-2} + 3$.

A	$y = x^2 + 11$	C	$y = x^2 - 6x + 11$	E	$y = x^2 - 11$
B	$y = x^2 + 1$	D	$y = x^2 - x - 6$		

8. **(5 pts)** Simplify $\log_4 32 - \log_4 2$.

A	2	C	64	E	4
B	16	D	3		

9. **(15 pts)** Simplify the imaginary expression.

$$\frac{4-3i}{1i^2+2i^5}$$

10. **(15 pts)** Solve the system of equations.

$$(y-2)^2+x^2=9$$

$$y-x=-1$$

11. **(15 pts)** Graph $f(x) = x^2 - 1$.

12. **(15 pts)** Find $f(g(x))$ if $f(x) = 3x^2 - 4x + 12$ and $g(x) = 2x - 5$.