Name: Exam 2

Sec 4 **Name:** _____
Winter 2019
Exam 2 **Time Limit: 90 min**

- **DO NOT open the exam booklet until you are told to begin. You should write your name and section number at the top and read the instructions.**
- Organize your work, in a reasonably neat and coherent way, in the space provided. If you wish for something to not be graded, please strike it out neatly. I will grade only work on the exam paper, unless you clearly indicate your desire for me to grade work on additional pages.
- You may use any results from class, homework or the text, but you must cite the result you are using. You must prove everything else.
- You needn't spend your time rewriting definitions or axioms on the exam.
- When you have completed your test, hand it to me and go have a great weekend!

Problem	Points	Score
1	5	
2	5	
3	10	
4	10	
5	15	
6	10	
Total:	55	

1. (5 points) The sum of three consecutive even numbers is 246. What are the integers?

2. (5 points) A girl is 5 years younger than her sister and the product of their ages is 204. How old is the older sister?

3. (10 points) Solve and check your result.

$$\begin{cases} 2x - 6y = -24 \\ x - 5y = -22 \end{cases}$$

4. (10 points) If 100 coins consists of quarters and dimes, how many of each are there if they are \$20.80 in total?

5. Solve,

   $4(x+3)^2 - 3 = 17$

(a) (5 points) $n^2 + 8n + 15 = 0$

(b) (5 points)

(c) (5 points) $x^2 - x + 1 = 0$

6. Find the solutions of each expression.

(a) (5 points) $\dfrac{4}{y-4} - \dfrac{3}{y-3} = 1$

(b) (5 points) $-3 + 2\sqrt{x+1} = 7$

Formulas

Exponents

$a^0 = 1$

$a^m \cdot a^n = a^{m+n}$

$\dfrac{a^n}{a^m} = a^{n-m}$

$(a^n)^m = a^{mn}$

$(ab)^n = a^n b^b$

$\left(\dfrac{a}{b}\right)^n = \dfrac{a^n}{b^n}$

$\left(\dfrac{a}{b}\right)^{-n} = \left(\dfrac{b}{a}\right)^n$

Product/factors

$(a+b)^2 = a^2 + 2ab + b^2$

$(a-b)^2 = a^2 - 2ab + b^2$

$a^2 - b^2 = (a-b)(a+b)$

$a^3 + b^3 = (a+b)(a^2 - ab + b^2)$

$a^3 - b^3 = (a-b)(a^2 + ab + b^2)$

Radicals

$\sqrt[n]{xy} = \sqrt[n]{x}\sqrt[n]{y}$

$\sqrt[n]{\dfrac{x}{y}} = \dfrac{\sqrt[n]{x}}{\sqrt[n]{y}}$

$x^{\frac{m}{n}} = \sqrt[n]{x^m} = (\sqrt[n]{x})^m$

Square Root Property

If $X^2 = k$ and $k \geq 0$ then $X = \pm k$.

Quadratic formula

$\Delta = b^2 - 4ac$, $\dfrac{-b \pm \sqrt{\Delta}}{2a}$