

Name:

1-A Sets

1. Circle each set to which the stated number belongs.

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|--------------------|---------|---------|----------|------|---------|
| a) $\frac{2}{3}$ | natural | integer | rational | real | complex |
| b) 34.1 | natural | integer | rational | real | complex |
| c) $12\sqrt{10}$ | natural | integer | rational | real | complex |
| d) $3 + \sqrt{-5}$ | natural | integer | rational | real | complex |

2. Given the expression $9x^8 - x + \sqrt{9x^2 + 3x} + 2 + \left| \frac{22x^{10}}{4x-9} - 8x \right|$, state the terms of the following.

- a) the whole expression b) the fraction denominator c) the square root argument d) the absolute value argument

3. Simplify.

- a) $\frac{21x^5\sqrt{14x}}{21x^5 - 28x^2}$ b) $\frac{40a^3b^4c^5\sqrt{10abc} + 20ab^{10}}{80a^2b^2c^2 - 60a^2b^2c^3 + 30a^3c^3 \tan 20ab^{10}}$

1-B Graphs of Polynomials

4. Sketch.

- a) $f(x) = -x^3 + 2x + 3$

1-C Properties of Exponents

5. Simplify. Do not use negative exponents in your final answers.

- a) $2(10x^4y)^3$ b) $2(10x^4y)^3x^5$ c) $2(10x^4y)^3x^5y^9$ d) $\frac{6(2a^4b)}{a^{12}bc^2}$

1-D Addition, Subtraction, and Multiplication of Polynomials

6. Subtract.

- a) $(x^3 + 2x) - (3x^2 - x)$ b) $(4x^6 + 2x^3 - 5x^2 + x - 8) - (10x^4 + 3x^2 - 4x - 9)$

7. Multiply.

- a) $(3x - 2)(x + 4)$ b) $(2x - 8)^2$
- c) $(3x - 2)(x + 4)(x + 1)$ d) $10x(3x - 2)(x + 4)(x + 1)$

1-E Factoring

8. Fill in the following chart.

<u>polynomial</u>	<u>a</u>	<u>b</u>	<u>type of polynomial</u>	<u>factors</u>
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$$x^2 - 64$$

$$x^3 - 64$$

$$x^3 + 64$$

$$x^2 - 6x + 9$$

$$100x^2 - 60x + 9$$

9. Factor completely.

a) $4x^2 + 12x + 9$

b) $3x^6 + 36x^5 + 105x^4$

c) $15x^5 + 24x^3 + 10x^2 + 16$

d) $18x^2 + 3x - 28$

1-F Division of Polynomials

10. Divide using long division.

a) $25602 \div 120$

b) $(3x + 5) \overline{)3x^3 + 20x^2 + 37x + 20}$

c) $(6x^3 + 9x^2 + 12) \div (2x^2 + 7x)$

11. Use your answer to 10b above to factor $3x^3 + 20x^2 + 37x + 20$.