

**Intermediate Algebra**  
**Chapters 6 & 7 Practice Test, Non-Calculator**

**I. Determine if the expression is rational.**

1.  $\frac{9}{\sqrt{x}}$

2.  $\frac{12-4x}{x^3}$

**II. Identify the domain of  $f$ .**

3.  $\frac{6x}{x-2}$

4.  $\frac{x+9}{x-3}$

**III. Simplify the following problems by performing the indicated operations. Write all fractions in lowest terms.**

5.  $\frac{x^2-2x-3}{x^2-x-6}$

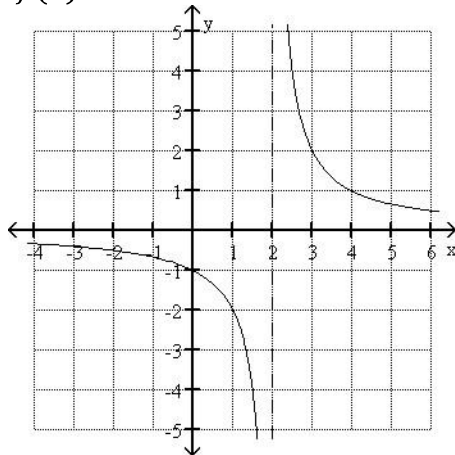
6.  $\frac{9ab^3}{16x^2y} \cdot \frac{4xy^4}{27a^3b}$

7.  $\frac{26x^4y^3}{12a^3b^5} \cdot \frac{9a^4b}{13x^2y^2}$

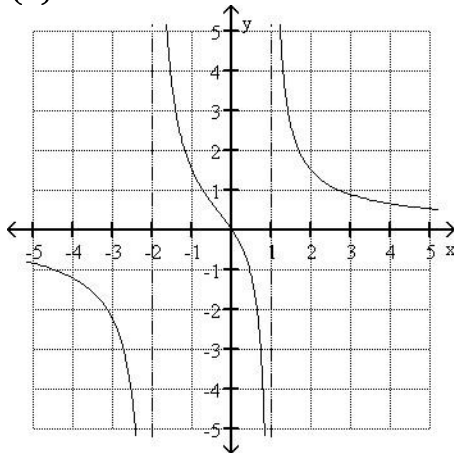
8.  $\frac{p-1}{p-3} \div \frac{2}{p-3}$

**IV. Use the graph to evaluate each expression.**

9.  $f(4)$



10.  $f(1)$



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**V. Solve.**

11.  $4 = \frac{2}{3x-2}$

12.  $\frac{11}{x} = \frac{5}{7}$

13.  $\frac{x}{6} = \frac{6}{20}$

**VI. a) Write an equation to represent the situation. b) Solve.**

14. x is to 5 as 4 is to 9.

15. A rectangle has sides of 6 and 12. In a similar rectangle the longer side is 48 and the shorter side is x.

**IV. Evaluate the following, simplify if possible.**

16.  $(-8)^{2/3}$

17.  $(9)^{-3/2}$

18.  $(-8)^{4/3}$

19.  $\sqrt{9x^6}$

20.  $\sqrt[3]{27x^{12}}$

21.  $\sqrt{121x^8y^{10}}$

**V. Write using radical notation.**

22.  $15^{3/7}$

23.  $(xy^2)^{-3/2}$

**VI. Simplify the following complex expression by performing the indicated operations. Pay attention to the operation symbols. Write all answers in standard form.**

24.  $(8 - 6i) - (5 + 2i)$

25.  $(4 + 5i) + (2 - 3i)$

26.  $(3i)(4i)$

27.  $(5i)(2 - 3i)$

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**Answers:**

1. Not Rational

3.  $\{x|x \neq 2\}$

5.  $\frac{x+1}{x+2}$

7.  $\frac{3ax^2y}{2b^4}$

9.  $f(4) = 1$

11.  $x = \frac{5}{6}$

13.  $x = \frac{9}{5}$

14. a)  $\frac{x}{5} = \frac{4}{9}$     b)  $x = \frac{20}{9}$

15. a)  $\frac{6}{12} = \frac{x}{48}$     b)  $x = 24$

16. 4

19.  $3x^3$

22.  $\sqrt[7]{15^3}$

24.  $3 - 8i$

26.  $-12$

2. Rational

4.  $\{x|x \neq 3\}$

6.  $\frac{b^2y^3}{12a^2x}$

8.  $\frac{p-1}{2}$

10.  $f(1)$  is undefined

12.  $x = \frac{77}{5}$

17.  $\frac{1}{27}$

20.  $3x^4$

23.  $\frac{1}{xy^3\sqrt{x}}$

25.  $6 + 2i$

27.  $15 + 10i$

18. 16

21.  $11x^4y^5$