Name_____ Class_____ Date_____

1 Graph the polynomial
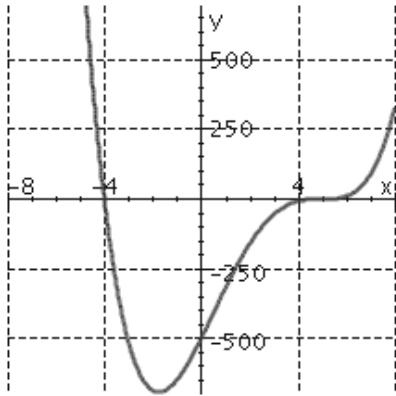
$$F(x) = (x - 1)^2 (x - 4)^2$$

and select the correct answer.

A

B

C

D
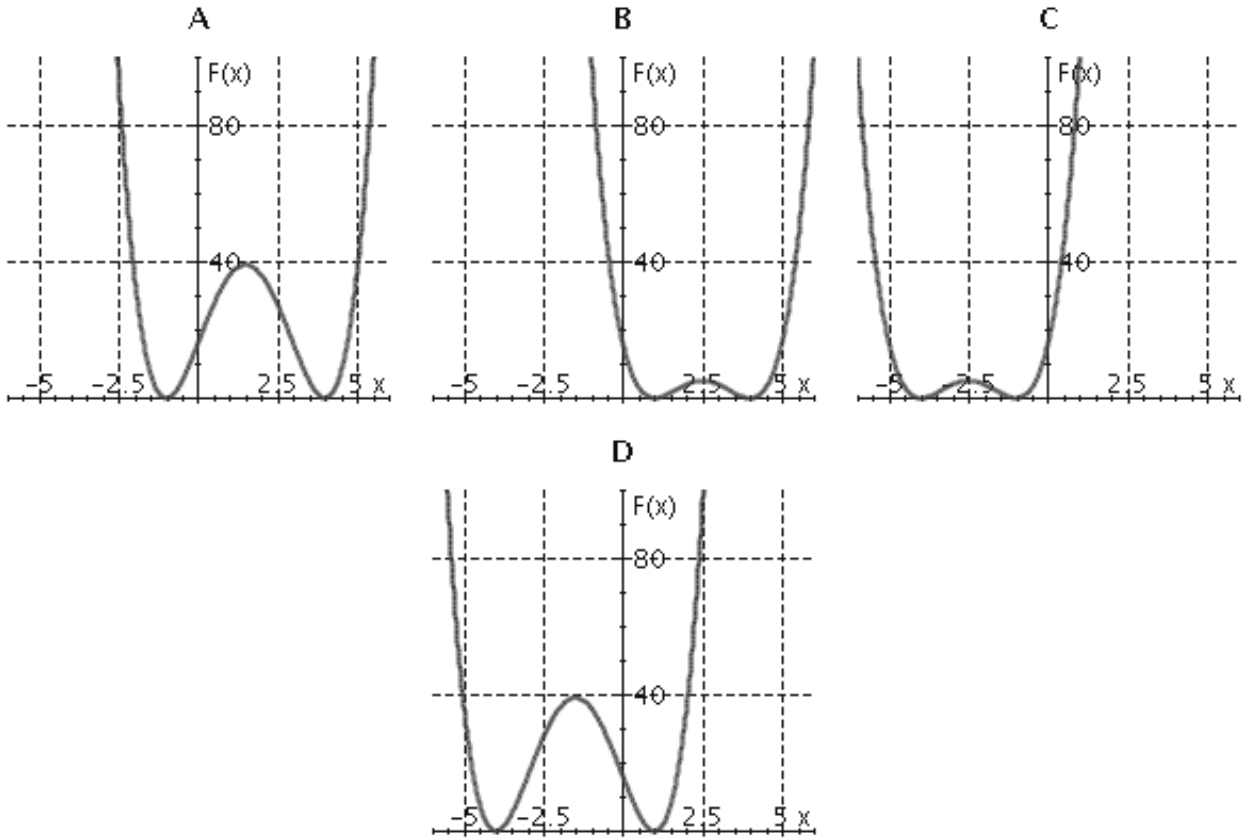
2 Find the zeros of the given polynomial by factoring:

$$s(x) = (x^2 - 16)(x - 6)^2$$

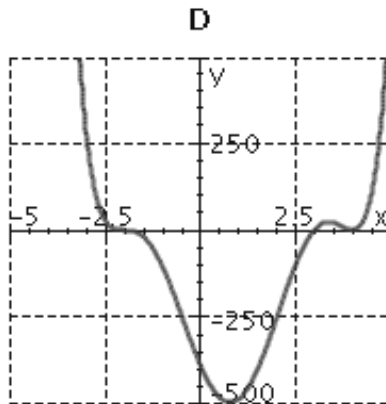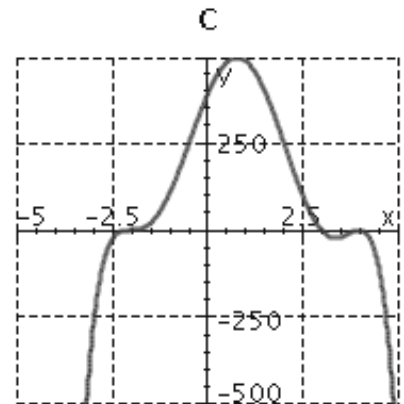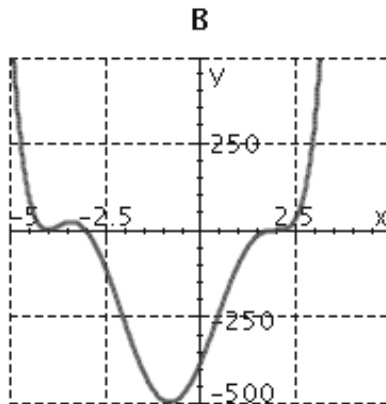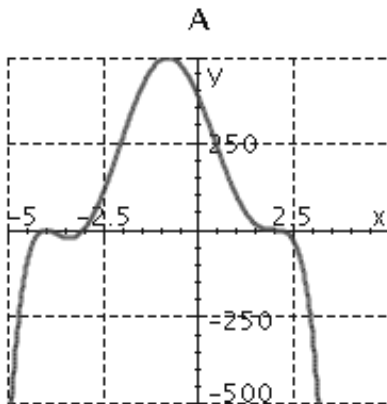**3** Find an equation in factored form for the polynomial graphed below.

4 Find the real-valued zeros of the following polynomial, and list the *x*-intercepts of its graph:

$$g(x) = x^4 - 15x^2 - 16$$

5 Graph the polynomial

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

and select the correct answer.

A

B

C

D

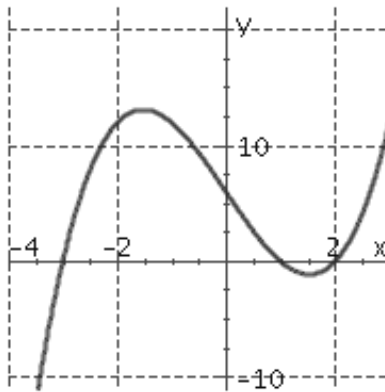**6** Locate the *x*-intercepts of the polynomial.

$$p(x) = x^3 - 4x^2 - 4x + 16$$

    a. $(-2, 0), (2, 0)$ d. $(-2, 0), (2, 0), (4, 0)$

    b. $(-6, 0), (2, 0), (4, 0)$ e. $(-4, 0), (2, 0), (4, 0)$

    c. $(4, 0), (4, 0), (4, 0)$

7 Find the zeros of the polynomial by factoring.

$$r(x) = x^4 - 10x^2 + 21$$

    a. $\pm\sqrt{5}, \pm\sqrt{8}$ b. $\pm\sqrt{7}, \pm\sqrt{3}$ c. $\sqrt{7}, \sqrt{3}$ d. $-\sqrt{5}, \sqrt{7}$

8 Find the equation in factored form of the polynomial graphed below.

9 Given that

$$f(x) = x^3 + x^2 + x + 1$$

Write the formula for the following function, and then graph it with a calculator.

$$y = f(x - 5)$$

10 The eider duck, one of the world's fastest flying birds, can exceed an airspeed of 65 miles per hour. A flock of eider ducks is migrating south at an average airspeed of 49 miles per hour against a moderate headwind. Their next feeding grounds are 120 miles away.

Find the ducks' travel time, *t*, as a function of the wind speed, *v*. Then give the equations of any horizontal or vertical asymptotes.

_____

11 The cost in thousands of dollars for extracting *p*% of a precious ore from a mine is given by the equation
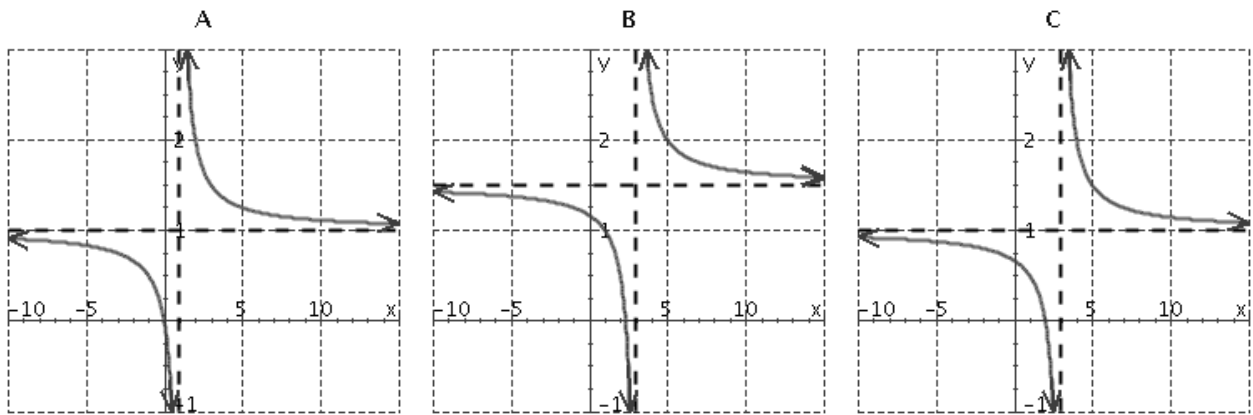
$$C(p) = \frac{370p}{210 - p}$$

What is the domain of $C(p)$?

12 Sketch the horizontal and vertical asymptotes for the function

$$y = \frac{x - 2}{x - 3}$$

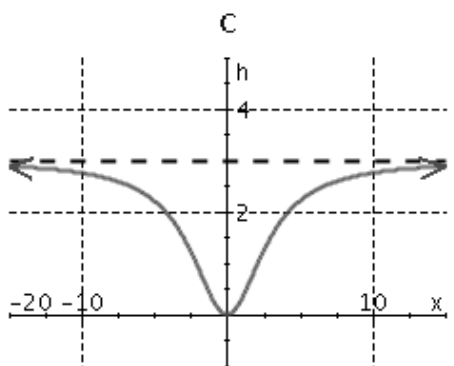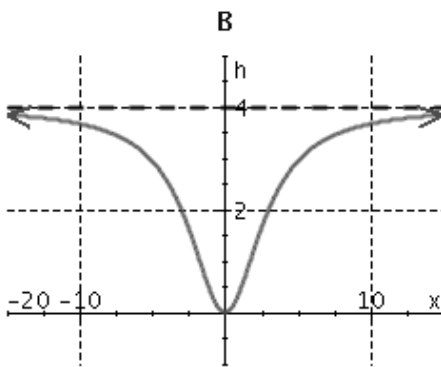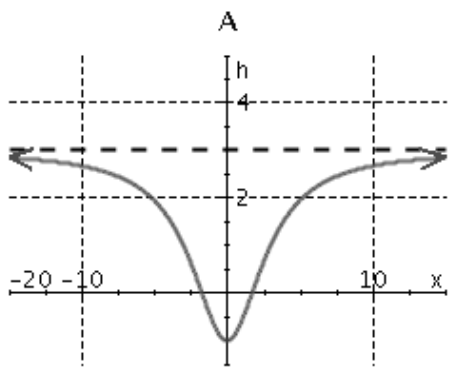and use the asymptotes to help you sketch the rest of the graph. Select the correct graph.

A

B

C

13 Find the domain of the rational function

$$f(x) = \frac{x^2 - 10}{x^2 - 225}$$

14 Locate the horizontal asymptotes and sketch the graph of

$$h(x) = \frac{4x^2}{x^2 + 9}$$

Select the correct graph.

A

B

C

15 The total cost in dollars of producing n calculators is approximately

$22000 + 7n$

Express the cost per calculator, C, as a function of the number of calculators, n, produced.

a. $C(p) = 7 + \dfrac{22000}{n}$
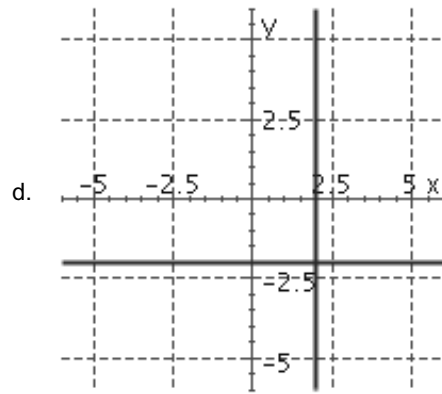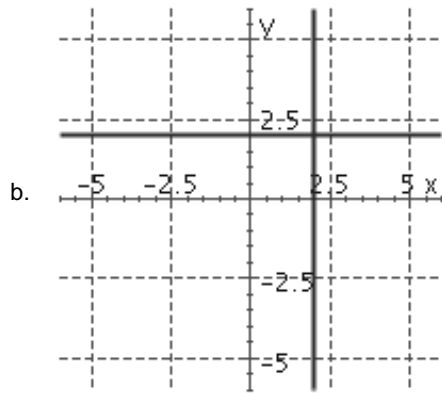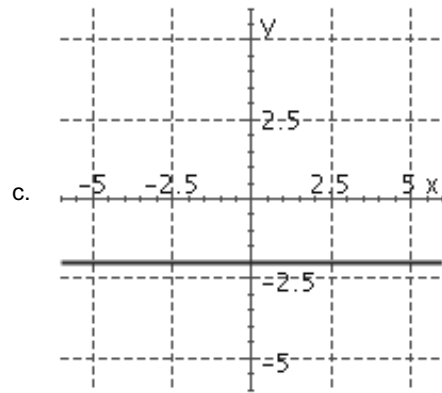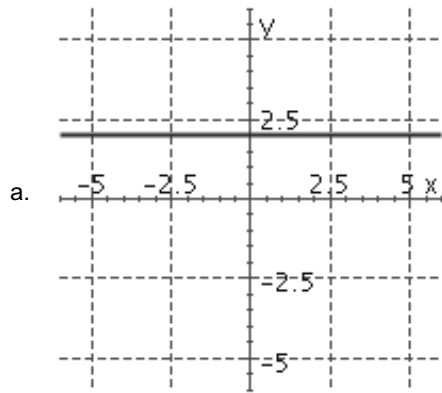
c. $C(p) = 22000 + \dfrac{n}{7}$

e. $C(p) = 7 + \dfrac{n}{22000}$

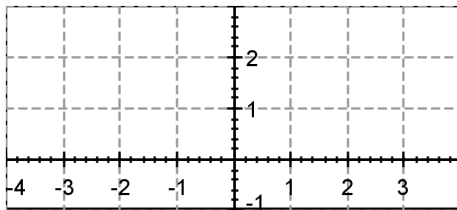b. $C(p) = 22000 + \dfrac{7}{n}$

d. $C(p) = n + 7$

16 Select the correct horizontal and vertical asymptotes for the following function.

$$y = \dfrac{2(x^2 - 5)}{x^2 + 2}$$

a.

c.

b.

d.

17 Graph the curve known as Witch of Agnesi.

$$y = \frac{8}{x^2 + 4}$$

18 Find the domain of the function.

$$y = \frac{x^2 - 25}{x - 5}$$

a. $x \in (-\infty, \infty)$ b. $x \in \varnothing$ c. $x \neq 0$ d. $x \neq 5$

6

ANSWER KEY

Recovered Assignment Template 4-7-08 11-10-05 AM PDT

1. B

2. $4, -4, 6$

3. $(x+4) \cdot (x-5)^3$

4. $4, -4, (-4,0), (4,0)$

5. D

6. d

7. b

8. $(x-2) \cdot (x-1) \cdot (x+3)$

9. $x^3 - 14x^2 + 66x - 104$

10. $x=49, y=0$

11. $(-\infty, 210) \cup (210, \infty)$

12. C

13. $(-\infty, -15) \cup (-15, 15) \cup (15, \infty)$

14. B

15. a

16. a

17.

18. d