Spring 2007

Practice

Write down your answers correctly in the boxes or spaces provided.

1. Perform the indicated operations. Express your answer as a polynomial in simplified form.

$$(x+1)(x-2)-(x+3)(x+2)$$

2. Factor completely: $4x^2 - y^2$

3. Factor $\dfrac{x^2+x-2}{x^2+6x+8}$, then reduce the fraction to lowest terms.

4. Let $f(x)=2x^2-x$. Calculate $f(x+h)$. Expand completely.

$f(x+h)=$

5. Combine into a single fraction and simplify: $\dfrac{6x}{2x+1}-3$

6. Express as a simple fraction: $\dfrac{\dfrac{x+6}{5}}{3}$

7. The area of a rectangle is 28 square centimeters and one side is 7 centimeters long. What is the perimeter of the rectangle?

Perimeter =

(include units)

8. Find the radius of a circle with area 10π square feet.

Radius =

(include units)

9. Find all solutions x which satisfy $\dfrac{7}{3} - 4x = \dfrac{3}{2} + x$.

$x =$

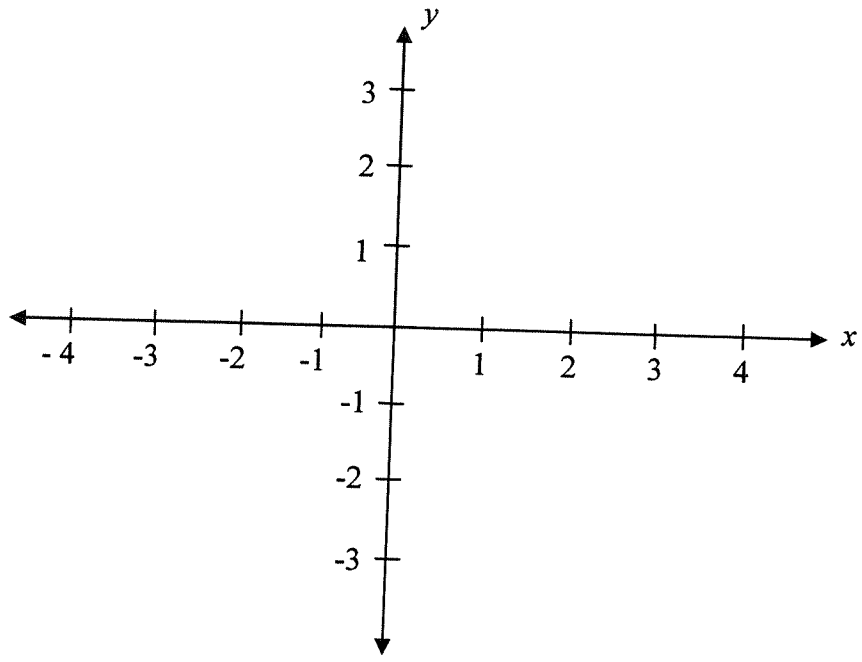
10. Find all solutions (real or complex) of $3x^2 + 4x + 2 = 0$.

$x =$

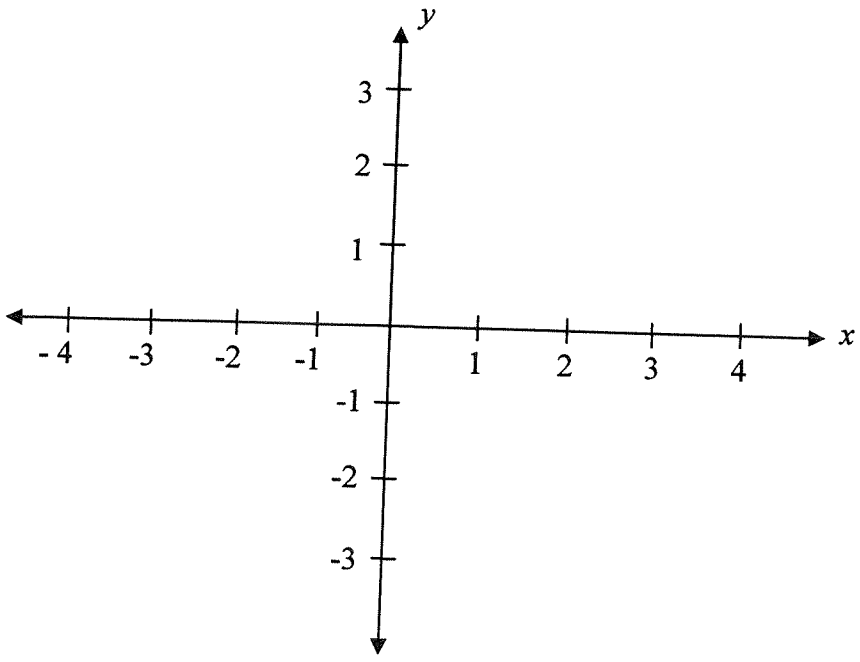
11. Solve the equation $A = \frac{1}{2} b h_1 + b h_2$ for h_1 in terms of the other variables.

$h_1 =$

12. Graph $y = 2 - 4x$. Clearly indicate the x- and y-intercepts.



13. Graph $y = -(x+1)(x-3)$. Clearly indicate all x- and y-intercepts.



14. Write $\left(\frac{1}{16}\right)^{-\frac{1}{2}}$ without using exponents or radicals.

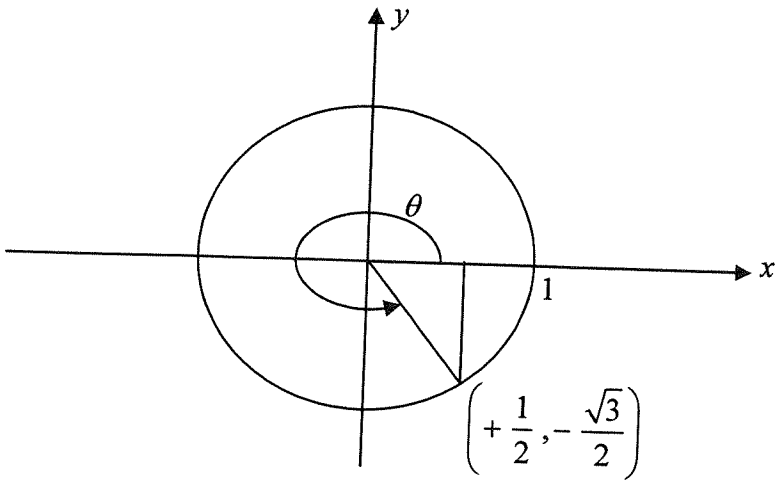
15. Write $\left(x^2\right)^7$ using a single positive exponent.

16. Write $x^{\frac{1}{2}}x^{-4}$ using a single positive exponent.

17. Find the value of 7^0.

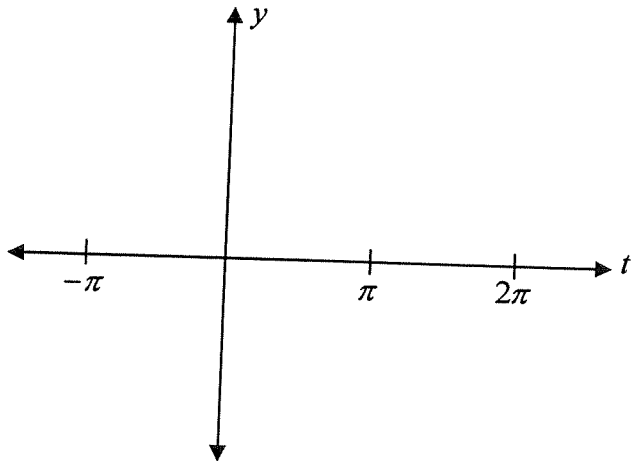
18. Find the value of $\log_2 8$.

19. Find $\tan\theta$ using the given picture:



$\tan\theta =$

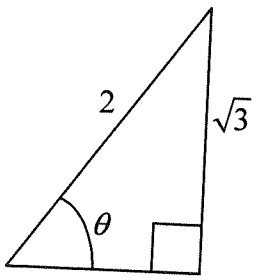
20. Sketch the graph of $y = \sin t$ on $[-\pi,\pi]$. Clearly number the y-axis.



21. Let θ be an acute angle in a right triangle with the opposite leg having length 5 and the hypotenuse having length 6. Find $\cos\theta$. Give EXACT answer.

$\cos\theta =$

22. What is θ, in degrees, in the diagram below?



$\theta =$

23. Find the exact value of $\sin\left(\frac{5\pi}{6}\right)$.

24. Express in terms of sine and cosine: $\sin x \cdot \tan x \cdot \csc x$. Simplify completely.

25. Expand and simplify $1+(\sin t+\cos t)^2$.