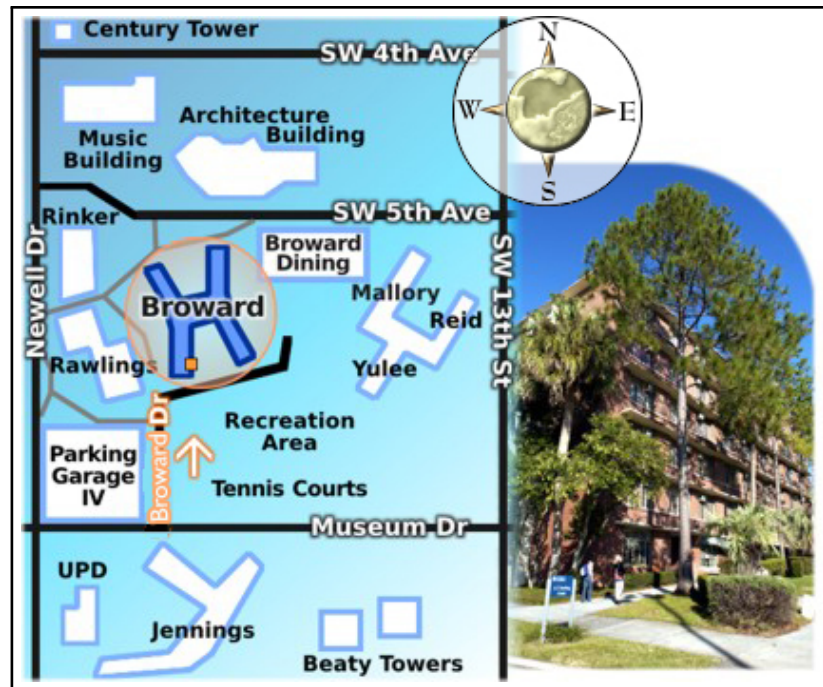


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- Walk-In tutoring at Broward Hall
- Private-Appointment, one-on-one tutoring at Broward Hall
- Walk-In tutoring in LIT 215
- Supplemental Instruction
- Video resources for Math and Science classes at UF
- Written exam reviews and copies of previous exams

The teaching center is located in the basement of Broward Hall:



You can learn more about the services offered by the teaching center by visiting <https://teachingcenter.ufl.edu/>

MAC 1147 Exam 1 Review

1. Sketch the following subsets of the real numbers on a number line

- (a) $[-4, 12)$
- (b) $(-\infty, 0]$
- (c) $x - 3 \leq 5$
- (d) x is no larger than 9.

2. Sketch the following subsets of the real numbers on a number line

- (a) $|x| < 2$
- (b) $|x| \geq 2$
- (c) $|x - 1| > 3$
- (d) The distance from x to 1 is at least 2.

3. Simplify the radical expressions

- (a) $\frac{\sqrt{18z^5x^7}}{\sqrt{2zx^3}}$
- (b) $\sqrt[5]{64x^{10} - 32x^5}$
- (c) $\frac{\frac{2}{\sqrt{2}} \cdot \sqrt{1^2 + 1^2}}{2}$

4. Write each function piecewise without absolute value bars.

- (a) $e(x) = |x|$
- (b) $f(x) = |2x + 1|$

5. Expand each of the following expressions.

- (a) $(x + 1)^2$
- (b) $(x - 2)(x + 2)$
- (c) $(2x - 1)^3$
- (d) $(x + y + 1)(x + y - 1)$

6. Determine the requested coefficient in the expanded form of each expression below.

- (a) Coefficient of x^2 in $(2x - 4)(1 - x)$
- (b) Coefficient of x in $(2x + 1)^2$

7. Factor each of the following polynomials.

(a) $8y^2(x + 3) - 2(x + 3)$

(b) $x^4 - 4$

(c) $x^2 + x - 6$

(d) $3x^2 - 6x + 3$

(e) $2x^2 + 5x - 3$

(f) $x^3 - 27$

(g) $x^3 + 3x^2 - 6x - 18$

8. Simplify and find the domain of each rational function.

(a) $f(x) = \frac{1}{1 - x}$

(b) $g(x) = \frac{x + 1}{x^2 + x - 6}$

9. Simplify each expression, leaving positive exponents only.

(a) $3x^{-4/3} + 2x^{-1/3}$

(b) $-x^{-1}(1 + x^2)^{-2/3} - 2x^{-3}(1 + x^2)^{1/3}$

(c) $x^2(1 - 2x)^{-3/2} + (1 - 2x)^{-1/2}$

10. Find the domain of each of the following functions.

(a) $f(x) = \frac{1}{\sqrt{x^2 - 1}}$

(b) $g(x) = \frac{x - 3}{x^2 - 5x + 10}$

(c) $h(x) = \sqrt{2x + 7}$

11. Solve the following equations for the indicated variable.

(a) $y = \frac{x + 2}{x - 1}$ for x .

(b) $4x^2 - 1 = 7$ for x

(c) $\sqrt{3 - 2t} = t$ for t

12. Solve the following inequalities.

(a) $-2x + 1 \geq 0$

(b) $\frac{1}{x-6} < 0$

(c) $|x - 5| + 15 > 5$

13. Determine the equation of a circle centered at $(1, 4)$ of radius 2.

14. Consider the points $P = (1, 3)$ and $Q = (4, 7)$.

(a) Find the distance between P and Q .

(b) Find the midpoint of the line segment joining P and Q .

(c) Find the equation of the circle, centered at the midpoint between P and Q , which passes through both P and Q .

15. Sketch the graphs of the following relations.

(a) $(x - 1)^2 + (y - 1)^2 = 2$

(b) $y = 2x - 3$

16. Consider the function $f(x) = x^2 - 6x + 9$.

(a) Find the y -intercept (if it exists) of $f(x)$.

(b) Find any x -intercepts (if they exist) of $f(x)$.

17. Plot the points $P = (2, 2)$ and $Q = (-1, 3)$.

(a) Find the equation for the line passing through P and Q ; graph this line.

(b) Find the equation for the line passing through P which is perpendicular to the line from part (a); graph this line.

18. Graph the function $f(x) = x^2$.

(a) Find the slope of the line joining the points $(1, f(1))$ and $(4, f(4))$.

(b) Find the slope of the line joining the points $(1, f(1))$ and $(2, f(2))$.