POLAR COORDINATES

1) Plot each of the following points on the polar coordinate plane. Be sure to label each point!

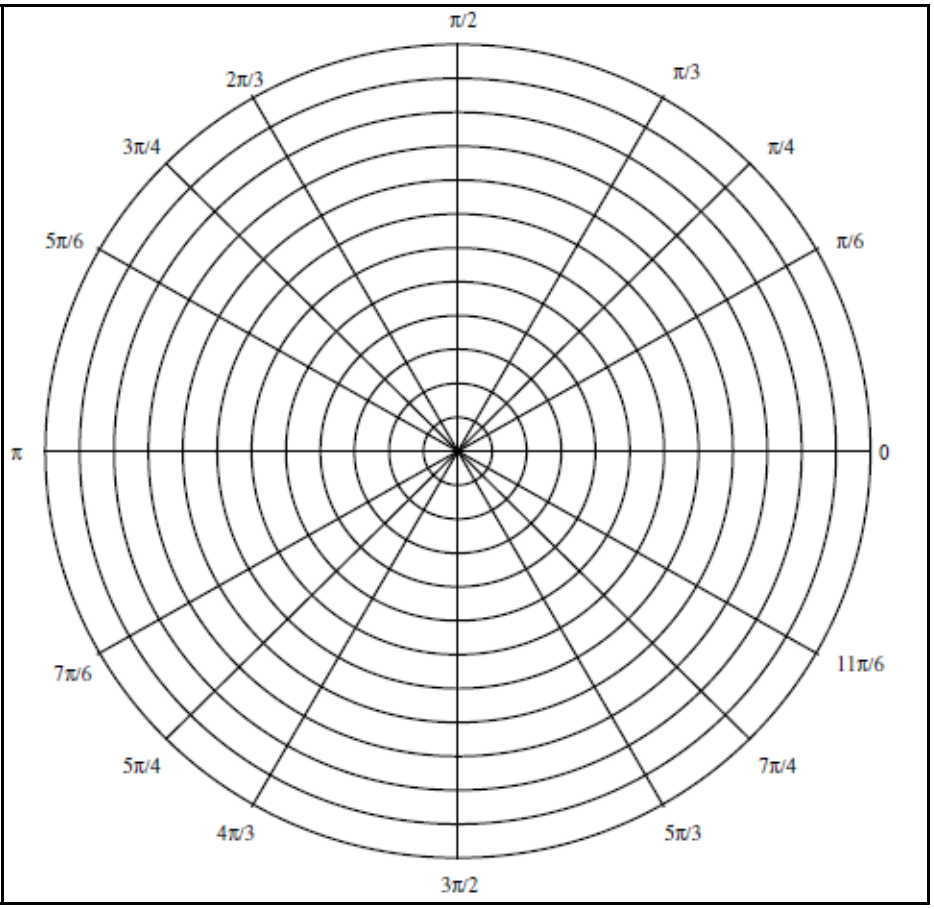
(a) $(1, 3\pi/4)$

(b) $(2, 3\pi)$

(c) $(2, -\pi/4)$

(d) $(-1, \pi/3)$

(e) $(-2, 0)$



2) Convert the following polar coordinates to cartesian/rectangular coordinates.

(a) $(4, \pi/6)$ (b) $(-2, \pi/3)$ (c) $(1, 3\pi/2)$

3) Convert the following cartesian/rectangular coordinates to polar coordinates.

(a) $(1, 1)$ (b) $(1, -1)$

4) Express each complex number in polar form.

(a) $4 + 3i$ (b) $-5 - 2i$

5) Express 5 cis 320° in rectangular form.

LIMITS WORKSHEET

Evaluate each of the following limits.

1) $\lim_{x \to -\infty} \frac{7x^2 - 3x + 2}{3x^2 + 8} =$

2) $\lim_{x \to -1} \frac{x^2 - 1}{x + 1} =$

3) $\lim_{x \to -1^-} \frac{x}{x + 1} =$

4) $\lim_{x \to 0} \frac{|x|}{x} =$

5) $\lim_{x \to 0} \frac{x}{1 - \sqrt{1 - x}} =$

6) $\lim_{h \to 0} \frac{(1 + h)^2 - 1}{h} =$

Determine whether the function is continuous or discontinous. Justify your reasoning. If discontinuous, identify points of discontinuity.

7) $f(x) = \begin{cases} 2 - x^2 \text{ if } x \leq 1 \\ x \text{ if } x > 1 \end{cases}$

BASIC CALCULUS WORKSHEET

Find the derivative of each of the following:

1) $f(x) = (3x^2 + 5)(2x - 1)$

2) $f(x) = \dfrac{6x - 11}{8x + 1}$

3) $f(x) = \dfrac{(5x - 2)(2x + 3)}{x - 4}$

4) $f(x) = (8x + 3)^2$

5) $f(x) = \sqrt{8 - 5x}$

6) $f(x) = -6x(7x - 1)^2$

7) $f(x) = -6e^{x+1}$

8) $f(x) = \ln(5x^2 - 3x)$

9) $f(x) = \dfrac{5x^2}{e^x}$

Evaluate each of the following integrals.

10) $\int_1^2 4x\,dx$

11) $\int_0^3 (x^2 + 3x)\,dx$

12) $\int_0^4 (x^2 - 4x + 5)\,dx$

Using integration, find the area of each of the enclosed regions.

13) x-axis and $f(x) = 2x - x^2$

14) $f(x) = x^2$ and $g(x) = x$

15) $f(x) = x^3 - 3x$ and $g(x) = x$