Math Analysis Midterm Exam Prep Worksheet Name _____

1. Given $\csc(A) = -\frac{5}{4}$ in Q III, and $(-2,\sqrt{5})$ is on the terminal side of B, find the **exact** values of: background info here)

$$LA = -\frac{4}{5} \left(= \frac{4}{7}\right)$$

$$Cos A = -\frac{3}{5} \left(= \frac{x}{7}\right)$$

$$LB = \frac{4}{5} \left(= \frac{3}{7}\right)$$

$$Cos B = -\frac{3}{5} \left(= \frac{x}{7}\right)$$

$$Cos B = -\frac{2}{3}$$

a. sin(A+B) = sinAcosB + cosAsinB

$$= \left(-\frac{4}{5}\right)\left(-\frac{2}{5}\right) + \left(-\frac{3}{5}\right)\left(\frac{5}{5}\right)$$
$$= \frac{8}{15} - \frac{315}{15} = \left(\frac{8-3\sqrt{5}}{15}\right)$$

b. cos (A - B)= cosA cos B + sinAsinB

$$(-\frac{3}{5})(-\frac{2}{3}) + (-\frac{4}{5})(\frac{15}{3})$$

$$\frac{1}{15} - \frac{4\sqrt{5}}{15} = (-\frac{1}{5})(-\frac{1}{5})$$

$$(-\frac{1}{5})(-\frac{2}{3}) - (-\frac{4}{5})(\frac{15}{3}) = (-\frac{1}{5})(-\frac$$

 $\frac{d - \csc(A \pm B)}{15} \sin(A - B) = \left(-\frac{4}{5}\right) \left(\frac{2}{3}\right) - \left(-\frac{3}{5}\right) \left(\frac{15}{3}\right)$ $= \frac{8}{15} + \frac{315}{15} = \left(\frac{8 + 3\sqrt{5}}{15}\right)$

2. Find the general solutions in degrees to the following equations:

$$c_{\delta}\beta c_{\delta}s\beta - s_{\delta}\alpha\beta s_{\delta}n\beta = c_{\delta}s(\beta + \beta)$$
a. $c_{\delta}s_{\delta}2x - sin_{\delta}30^{\circ}sin_{\delta}2x = \frac{1}{\sqrt{3}}$ for $x \in \{\text{Re als}\}$

$$c_{\delta}s_{\delta}(30 + 2x) = \frac{1}{\sqrt{3}}$$
 QT and TV
$$30 + 2x = c_{\delta}s'(\frac{1}{\sqrt{5}})$$

$$30 + 2x = 54.735\zeta \pm 360n , 305.86444 \pm 360n$$

$$2x = 84.735\zeta_{0}^{\circ}s^{2} + 180n$$

$$137.6322^{\circ} \pm 180n$$
b. $cos x \sin 70^{\circ} - sin x \cos 70^{\circ} = -\frac{1}{2}$ for $x \in \{0^{\circ}, 360^{\circ}\}$

$$s_{1n}(x - 7n) = -\frac{1}{2}$$

 $\times -10 = 210^{\circ}, 330^{\circ} \Rightarrow \chi = 280^{\circ}, 400^{\circ}$



Jeff Mullen's fantasy league points have a week by week total shown below.

3. Make a stem-leaf plot of these values in the given space below.

Week	Points
1	35
2	73
3	72
4	59
5	63
6	81
7	84
8	73
9	75
10	64
11	83
12	93
13	81
14	83



4) Construct a histogram of the data above according to the labels on the *x*-axes. Label the *y*-axes accurately



5) On the axes below, draw a box plot of the data. Indicate the values of the five number summary $y \uparrow$



Indicate and justify any outliers in this data

35 is an outlier because... 1.5(IR) = 28.5IR = Q3-Q1 = 83-64 = 19 Q1-35 = 64-35 = 29>28.5 \Rightarrow 35 is an outlier

For this data, would the mean/standard deviation be a more appropriate measurement than the five-number summary? Explain your answer. You may use the calculator short cuts to mean/SD if necessary.

Mean = 72.788 SD. = 14.343

6) Take all the numbers from the box plot (including any outliers you may or may not have found) and calculate the standard deviation of those numbers *showing all steps*

35,59,64,74,83,93

X	X-X	$(x-\overline{x})^2$
35	-33	1089
59	-9	81
64	-4	16
74	6	36
83	15	225
93	25	625

$$\frac{\sum(x-\bar{x})^2}{n-1} = \frac{2072}{5} = 414.4 \Rightarrow \sqrt{414.4} \approx 20.357$$