681: 3-6, 9-10, 47, 48, 51

3. z, if $X=19$, $\mu=22$, $\sigma=2.6$

$$z = \frac{19-22}{2.6} = -1.154$$

4. X if $z=2.3$, $\mu=64$, $\sigma=1.3$

$$2.3 = \frac{X-64}{1.3} \qquad 2.99 = X-64 \qquad X = 66.99$$

5. z if $X=52$, $\mu=43$ $\sigma=3.7$

$$z = \frac{52-43}{3.7} = 2.432$$

6. X if $z=2.5$ $\mu=27$ $\sigma=0.4$

$$2.5 = \frac{X-27}{.4} \qquad 1 = X-27 \qquad X=28$$

9. 797 gold catfish

reaches max length within 3 months
- Average length at birth = 4.69mm
- Standard Deviation 0.258 mm

a # fish < 4.5mm $X=4.5$, $\mu=4.69$, $\sigma=0.258$

$$z = \frac{4.5-4.69}{0.258} = -.736$$

Norm cdf (-99, -.736) = .2308

b. # fish > 5mm

$$z = \frac{5-4.69}{.268} = 1.2$$

Norm cdf (-99, 1.2) = .885

88% ≤ 5mm
12% > 5mm

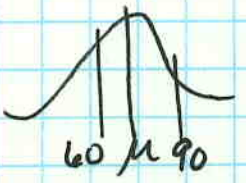
96 fish longer than 5mm

23% fish less than 4.5 mm

183 fish

10. 16000 passengers wait time $\mu = 72$ min, $\sigma = 15$ min

a. # passengers wait < 60 min



$z = \frac{60-72}{15} = -.8$ Normcdf = .212

$.212 \times 16000 = 3389$ passengers

b. # passengers > 90 min

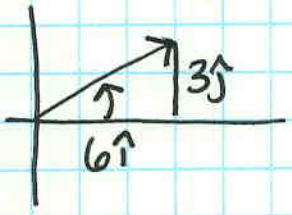
$z = \frac{90-72}{15} = 1.2$ Normcdf = .885

$1 - .885 = .115$ ← prop. > 90 min

$.115 \cdot 16000 = 1841$ passengers

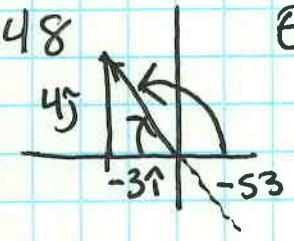
47. Find direction angle

$6\hat{i} + 3j$



$\theta = \tan^{-1}\left(\frac{3}{6}\right) = 26.56°$

48



$\theta = \tan^{-1}\left(\frac{4}{-3}\right) = -53.13$

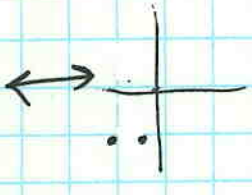
$180° - 53.13° = 126.87°$

51. CV $(-1,-6), (-3,-6)$ Maj = 10, $a = 5$

$2b = 2$ $b = 1$

$h, k = (-2, -6)$

$\frac{(x+2)^2}{25} + \frac{(y+6)^2}{1} = 1$



		H	μ_H	σ
28.	C	85%	82%	12%
	O	94%	91%	15%
	P	46%	43%	10%

a) What city has the highest / lowest relitive humidity?

"Standardize" data → find / compare z-values

$$z = \frac{X - \mu}{\sigma}$$