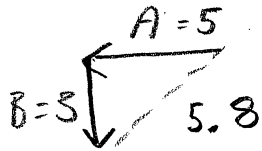


Chapter 5 Review/Test Prep

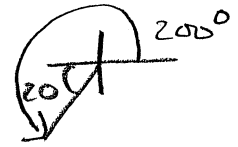
5.1, 5.2, 5.4

① B



② C

③ C



④ C

⑤ A

⑥ A

⑦ A

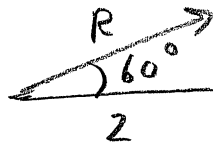
⑩ A

⑪ B

⑫ B

⑬ A

⑰ D



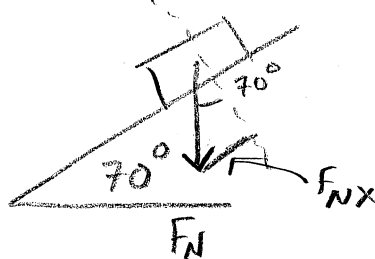
$$R \cos 60 = 2$$

$$R = 4$$

⑱ A

⑳ C

㉒ A



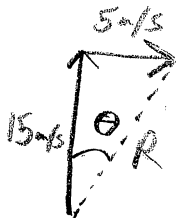
$$F_{NX} = F_N \sin 70$$

$$F_{NX} = mg \sin 70$$

$$100 = m(9.8) \sin 70$$

$$m = 10.9 \text{ kg}$$

㉓ C

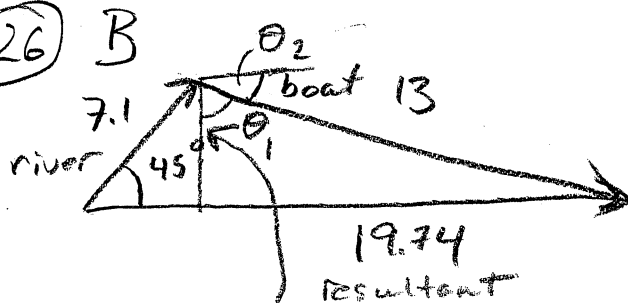


$$R = 15.8$$

$$\theta = \tan^{-1}\left(\frac{5}{15}\right)$$

$$= 18.4^\circ$$

㉔ B

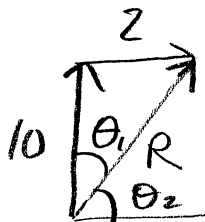


$$7.1 \sin 45 = 5.02$$

$$\theta = \cos^{-1}\left(\frac{5.02}{13}\right) = 67.3^\circ \text{ East}$$

$$\text{So } \theta_2 = 22.7^\circ \text{ S of E}$$

(27) B



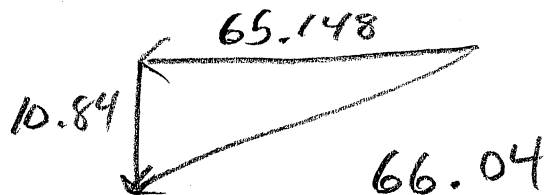
$$R = 10.2 \text{ m}$$

$$\theta_1 = \tan^{-1}\left(\frac{2}{10}\right) = 11.3^\circ$$

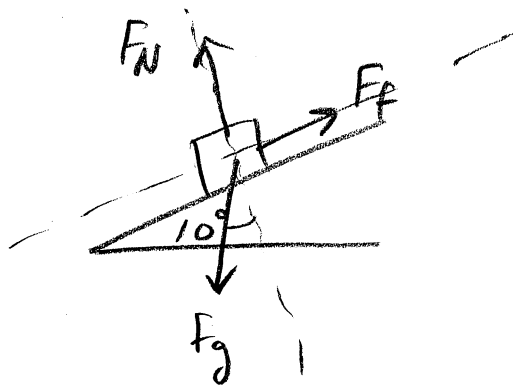
$$\theta_2 = 90 - 11.3 = 78.7^\circ$$

(28) C

	<u>X</u>	<u>Y</u>
	$-55 \cos 12 =$ -53.798	$55 \sin 12 =$ 11.435
	$-25 \cos 63 =$ -11.350	$-25 \sin 63 =$ -22.275
	<hr/> -65.148	<hr/> -10.84



(31) C



$$F_f = \mu F_N$$

x

$$F_g \sin 10 - F_f = ma$$

$$mg \sin 10 - F_f = 0$$

$$F_f = mg \sin 10$$

y

$$F_N - F_g \cos 10 = ma$$

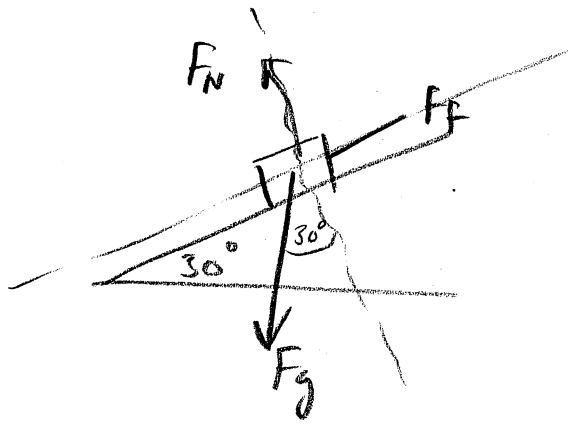
$$F_N - mg \cos 10 = 0$$

$$F_N = mg \cos 10$$

$$\begin{aligned} \mu &= \frac{F_f}{F_N} \\ &= \frac{mg \sin 10}{mg \cos 10} \end{aligned}$$

$$\mu = 0.18$$

(32) B



$$F_f = \mu F_N$$

$$\mu = \frac{F_f}{F_N}$$
$$= \frac{25}{466.79}$$

$$\mu = 0.05$$

y

$$F_N - F_g \cos 30 = ma$$

$$F_N = mg \cos 30$$
$$= (55)(9.8) \cos 30$$
$$= 466.79$$

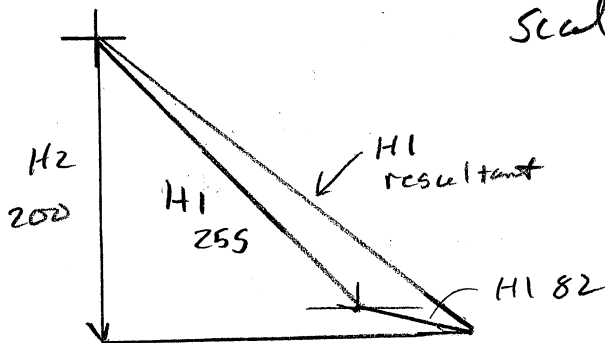
(36) A

(37) A

(38) C

(39) C

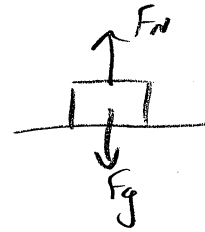
Scale 1cm = 50m



H2 resultant 5.2cm x 50 = 260 East

(48) A

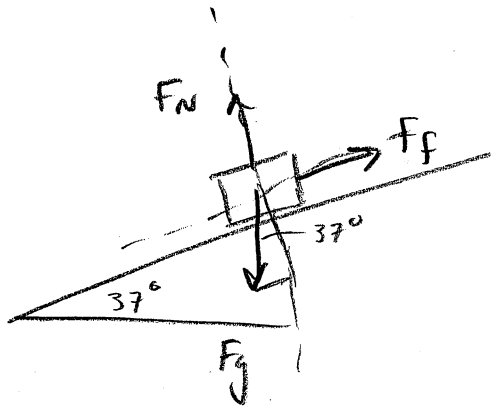
(49) D



$$\begin{aligned} F_f &= \mu F_N \\ &= 0.4(5)9.8 \\ &= 19.6 \text{ N} \end{aligned}$$

$F_{\text{app}} > F_f$
therefore it will move

(50) C



$$F_f = \mu F_N$$

$$= \mu mg \cos 37$$

$$= (0.07)(67)(9.8) \cos 37$$

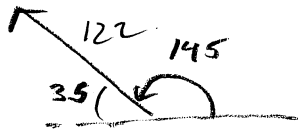
$$= 36.71 \text{ N}$$

$$F_N - F_g \cos 37 = ma$$

$$F_N = mg \cos 37$$

56 C

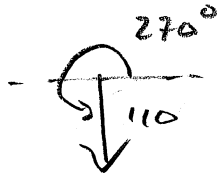
A



$$\begin{array}{r} \underline{X} \\ -122 \cos 35 = \\ -99.94 \end{array}$$

$$\begin{array}{r} \underline{Y} \\ 122 \sin 35 = \\ 69.98 \end{array}$$

B



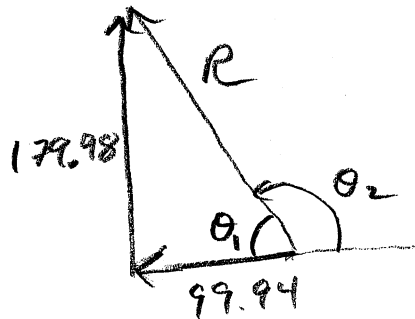
$$0$$

$$-110$$

(subtraction)

$$\underline{-99.94}$$

$$\underline{179.98}$$



$$R = 206$$

$$\theta_1 = \tan^{-1}\left(\frac{179.98}{99.94}\right) = 61^\circ$$

$$\theta_2 = 180 - 61 = 119^\circ$$

57 B

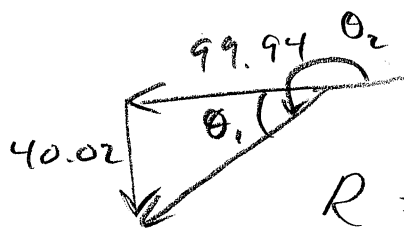
for addition

$$\underline{X}$$

$$\underline{Y}$$

$$-99.94$$

$$-40.02$$



$$R = 108$$

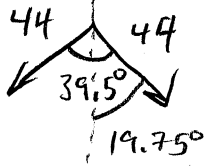
$$\theta_1 = \tan^{-1}\left(\frac{40.02}{99.94}\right) = 21.8^\circ$$

$$\theta_2 = 180 + 21.8 = 201.8^\circ$$

58 A

59

C



x components will cancel

y component for each is

$$44 \cos(19.75) = 41.4$$

∴ magnitude of net force is

$$2(41.4) = 82.8 \text{ N}$$

60 A

61 B

70 D

72 A

73 A

80 B

81 B

82 D

83 B

84 B

87 A

88 B