Raúl Vargas

1) ✓ $2T \cos\theta = mg = W$ → $T = \frac{W}{2\cos\theta}$

✓ $\cos\theta = \frac{0.12}{\sqrt{3^2 + (0.12)^2}}$ → $\cos\theta = 0.04$

(B) $T = \frac{255}{2 \times 0.04}$ → 3187.5 → $\boxed{3.19 \times 10^3 \ N}$

2) (A) The net force acting on the object is zero

3) $Ta = F - P$

$500 \cdot 1.5 = 1350 - P$

$P = 1350 - 750 = \boxed{P = 600 \ N}$ (A)

4) $a = \frac{(m_1 - m_2)}{m_1 + m_2} g$ → $a = \frac{(5-3)}{(5+3)} \times 9.8$

$a = 2.45$ → $\boxed{2.5 \ m/s^2}$ (D)

downward

5) $a = \frac{m_1 g}{m_1 + m_2}$ → $a = \frac{2 \cdot 9.8}{2 + 2}$

$\boxed{a = 4.9 \ m/s^2}$ (D)

6) Speed is constant, so net force is zero.

$T = mg$, this means $\boxed{T = 5.0 \text{ N}}$ Ⓒ

7) $F = ma$
$125 = m \cdot 24 \rightarrow m = 125/24$ ⤵

$\boxed{m = 5.21 \text{ kg}}$ Ⓔ

8) Ⓓ The object pulling upward on the Earth with force mg.

9) $mg \cdot \sin\theta = K \cdot mg \cdot \cos\theta$

$K = \tan\theta$

✓ Since angle A is greater than angle B

$\boxed{✓ \mu_A > \mu_B \quad Ⓑ}$

10) ✓ rad of second curve $\rightarrow r = 2r$
✓ speed $\rightarrow v = 2v$

/ If first curve has centripetal acceleration $ac = v^2/r$

Then second curve $= 2v^2/r \rightarrow \boxed{\text{Twice as big}}$

$\boxed{Ⓐ \; F_{c_2} = 2F_{c_1}}$