

MECHANICS AUDIT: Answers

1. False
 2. $72g$ ($\approx 705.6 \text{ N}$)
 3. (a) $9g$ (88.2 N) (b) $12g$ (117.6 N)
 4. B
 5. (a) $3g$ (29.4 N) (b) B
 6. (a) A (b) B
 7. (a) $3g \cos 40$ (22.5 N) (b) $3g \sin 40$ (18.9 N)
 8. (a) $3g \cos 22$ (31.7 N) (b) $3g \tan 22$ (11.9 N)
 9. (a) 128 m (b) 208 m (c) 4 ms^{-2}
 10. (a) $\sqrt{40g} \text{ ms}^{-1}$ (19.8 ms^{-1}) (b) $\sqrt{\frac{40}{g}} \text{ s}$ (2.02 s)
 11. (a) $\sqrt{26685} \approx 163.4 \text{ m}$ (b) $11.7\mathbf{i} - 11.4\mathbf{j}$
(c) $11.9\mathbf{i} - 10.9\mathbf{j}$ (d) $120\mathbf{i} - 110\mathbf{j}$
 12. (a) $\mathbf{F}_3 = -(a+c)\mathbf{i} - (b+d)\mathbf{j}$ (b) $\sqrt{(a+c)^2 + (b+d)^2}$
 13. A : false B : false
 14. 7768 N ($800g - 80$)
 15. $g(\sin 50 - 0.3 \cos 50)$
 16. A : true B : false
 17. C
 18. (i) C (ii) C (iii) A
 19. 6 ms^{-1}
 20. 296 Nm
 21. $96 \sin 55^\circ \text{ Nm}$ ($\approx$)
 22. At A, $\frac{34g}{7} \text{ N}$ and at B, $\frac{36g}{7}$
 23. (a) $\frac{2g}{3} \text{ ms}^{-1}$ (b) $5g \text{ N}$
 24. 18 Nm anticlockwise
 25. A : false B : false
 26. A : true B : false
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