

Physics 112 Exam Review Answer Key

Kinematics

13. $t = 1.46 \times 10^4 \text{ s}$
or 4.07 h

14. $v = -3.75 \text{ m/s}$

17. $v_f = +18.2 \text{ m/s}$

18. $a = -2.4 \text{ m/s}^2$

19. $v_f = +7.2 \text{ m/s}$
 $d = +8.6 \text{ m}$

20. $a = -1.0 \text{ m/s}^2$
 $d = +4.5 \times 10^2 \text{ m}$

21. $d = +8.8 \times 10^2 \text{ m}$

22. $d = +9.00 \times 10^3 \text{ m}$
or +9.00 km

Dynamics

8. $a_g = -0.37 \text{ m/s}^2$

9. $F_N = +4.41 \times 10^3 \text{ N}$
 $F_A = +1.5 \times 10^3 \text{ N}$

10. $m = 1.9 \times 10^2 \text{ kg}$

13. $F_{\text{net}} = +300 \text{ N}$
 $a = +0.750 \text{ m/s}^2$

14. $a = +1.4 \text{ m/s}^2$

15. $d = +11 \text{ m}$

16. $a = +0.444 \text{ m/s}^2$
 $F_{\text{net}} = 755 \text{ N}$

17. F_T or $F_A = +1.1 \times 10^3 \text{ N}$

19. $J = 2.3 \times 10^{-2} \text{ N s}$

20. $J = -16 \text{ kg m/s}$

21. a) $v_{ib} = 502 \text{ m/s}$
b) $v_r = -2 \text{ m/s}$

22. $v_2 = -20 \text{ m/s}$

Energy

8. $W = 8.0 \times 10^2 \text{ Nm}$

9. $P = 1.50 \times 10^4 \text{ W}$

10. $\text{EFF} = 34\%$

14. $v_f = 66.2 \text{ m/s}$

15. $h = 10.2 \text{ m}$

16. $x = 0.30 \text{ m}$
 $v_f = 29 \text{ m/s}$

17. $h = 1.4 \text{ m}$

18. $W_f = -1.5 \times 10^3 \text{ J}$

19. a) $v_f = 16 \text{ m/s}$

b) $h_f = 13 \text{ m}$

20. $v_i = 2.2 \text{ m/s}$

c) $W_f = -2.5 \times 10^4 \text{ J}$

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Waves

11. $v = 349 \text{ m/s}$

12. $T = 2.18 \times 10^5 \text{ s}$

13. $f = 2.5 \text{ Hz}$ $T = 0.40 \text{ s}$

14. $\lambda = 47 \text{ m}$

15. $v = 0.26 \text{ m/s}$

16. $\lambda = 0.993 \text{ m}$

17. $d = 8.7 \times 10^2 \text{ m}$

18. $t = 29.2 \text{ s}$

19. $t = 0.53 \text{ s}$

20. $\theta_R = 19^\circ$

21. $n_R = 0.90$

22. $\theta_c = 49^\circ$

Impossible
because...