Name:_____

640:244–01 SPRING 2007 Quiz 6 March 7, 2007

Formulas	For $y'' + py' + qy = g$:	$u_1' = -gy_2/W(y_1, y_2)$,	$u_2' = gy_1/W(y_1, y_2)$.

1. A mass of 3 kg is hung from a spring with spring constant 12 newton/meter. The mass is then released from a position 1 meter below its equilibrium position, with a velocity of 4 meter/sec directed upward. Find the resulting motion and give explicitly its **frequency**, **period**, and **amplitude**, expressing your answers in appropriate units. *There is no friction or damping in the system.*

2. Given that the equation $t^2y'' + ty' - y = 0$ has solutions $y_1(t) = t$ and $y_2(t) = 1/t$, find *one* solution of the equation $t^2y'' + ty' - y = 5t^2$. Hint: you may use the formulas above.

Name:_____

640:244–02 SPRING 2007 Quiz 6 March 7, 2007

Formulas	For $y'' + py' + qy = g$:	$u_1' = -gy_2/W(y_1, y_2)$,	$u_2' = gy_1/W(y_1, y_2)$.

1. A mass of 2 kg is hung from a spring with spring constant 18 newton/meter. The mass is then released from a position 3 meters below its equilibrium position, with a velocity of 3 meter/sec directed upward. Find the resulting motion and give explicitly its **frequency**, **period**, and **amplitude**, expressing your answers in appropriate units. *There is no friction or damping in the system.*

2. Given that the equation $t^2y'' + ty' - y = 0$ has solutions $y_1(t) = t$ and $y_2(t) = 1/t$, find *one* solution of the equation $t^2y'' + ty' - y = -t^3$. Hint: you may use the formulas above.

Name:_____

640:244–03 SPRING 2007 Quiz 6 March 7, 2007

Formulas	For $y'' + py' + qy = g$:	$u_1' = -gy_2/W(y_1, y_2)$,	$u_2' = gy_1/W(y_1, y_2)$.

1. A mass of 1 kg is hung from a spring with spring constant 16 newton/meter. The mass is then released from a position 2 meters above its equilibrium position, with a velocity of 8 meter/sec directed upward. Find the resulting motion and give explicitly its **frequency**, **period**, and **amplitude**, expressing your answers in appropriate units. *There is no friction or damping in the system.*

2. Given that the equation $t^2y'' + ty' - y = 0$ has solutions $y_1(t) = t$ and $y_2(t) = 1/t$, find *one* solution of the equation $t^2y'' + ty' - y = t^5$. Hint: you may use the formulas above.