



Calculus 2 Workbook

Economics

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MATH

SINGLE DEPOSIT, COMPOUNDED N TIMES, FUTURE VALUE

- 1. Find the future value of \$9,500 after 7 years, at an annual interest rate of 2.25 % , compounded quarterly.

- 2. Find the future value of \$14,550 after 3 years, at an annual interest rate of 1.95 % , compounded monthly.

- 3. Find the future value of \$7,595 after 5 years, at an annual interest rate of 3.25 % , compounded weekly.



SINGLE DEPOSIT, COMPOUNDED N TIMES, PRESENT VALUE

- 1. Find the present value of a deposit that, after 9 years, at an annual interest rate of 4.75% , compounded monthly, will have a value of \$24,514.01.
- 2. Find the present value of a deposit that, after 3 years, at an annual interest rate of 7.85% , compounded weekly, will have a value of \$948.99.
- 3. Find the present value of a deposit that, after 6 years, at an annual interest rate of 3.95% , compounded quarterly, will have a value of \$1,582,46.



SINGLE DEPOSIT, COMPOUNDED CONTINUOUSLY, FUTURE VALUE

- 1. Find the future value of \$2,850, after 8 years, at an annual interest rate of 1.55 % , compounded continuously.

- 2. Find the future value of \$9,875, after 15 years, at an annual interest rate of 4.15 % , compounded continuously.

- 3. Find the future value of \$15,000, after 18 years, at an annual interest rate of 8.5 % , compounded continuously.



SINGLE DEPOSIT, COMPOUNDED CONTINUOUSLY, PRESENT VALUE

- 1. Find the present value of a deposit that, after 11 years, at an annual interest rate of 2.75% , compounded continuously, will have a value of \$11,631.08.

- 2. Find the present value of a deposit that, after 7 years, at an annual interest rate of 6.17% , compounded continuously, will have a value of \$3,850.45.

- 3. Find the present value of a deposit that, after 4 years, at an annual interest rate of 5.95% , compounded continuously, will have a value of \$6,343.55.



INCOME STREAM, COMPOUNDED CONTINUOUSLY, FUTURE VALUE

- 1. Money is invested at a rate of \$10,000 annually and the bank pays 8.85 % interest, compounded continuously. How many years will it take for the investment to grow to a balance of \$300,000?

- 2. Money is invested at a rate of \$5,000 annually and the bank pays 6.75 % interest, compounded continuously. How many years will it take for the investment to grow to a balance of \$100,000?

- 3. Money is invested at a rate of \$2,500 annually and the bank pays 5.25 % interest, compounded continuously. How many years will it take for the investment to grow to a balance of \$25,000?



INCOME STREAM, COMPOUNDED CONTINUOUSLY, PRESENT VALUE

- 1. Suppose that money is deposited steadily into an account at a constant rate of \$15,000 per year for 13 years. Find the present value of this income stream if the account pays 7.35% , compounded continuously.

- 2. Suppose that money is deposited steadily into a college fund at a constant rate of \$3,000 per year for 18 years. Find the present value of this income stream if the account pays 5.15% , compounded continuously.

- 3. Suppose that money is deposited steadily into a new car account at a constant rate of \$2,500 per year for 8 years. Find the present value of this income stream if the account pays 7.5% , compounded continuously.



CONSUMER AND PRODUCER SURPLUS

- 1. Find the equilibrium quantity q_e and the equilibrium price p_e .

$$S(q) = 0.06q^2 + 5$$

$$D(q) = 0.1q + 17$$

- 2. Find the consumer surplus.

$$S(q) = 0.05q^2 + 7$$

$$D(q) = -0.2q + 11.8$$

- 3. Find the equilibrium quantity q_e and the equilibrium price p_e .

$$S(q) = 0.09q^2 + 8$$

$$D(q) = 1.55q + 25.5$$



