Math 152 Table of Formulas

1. CIRCLE: $(x-h)^2+(y-k)^2=r^2$

2. PARABOLA: $y-k=a(x-h)^2$

$y=f(x)=ax^2+bx+c \quad (a\neq 0)$ vertex at: $\left(-\frac{b}{2a},\, c-\frac{b^2}{4a}\right)$

For the following formulas, *r* is the annual interest rate, *n* is the number of years, *k* is the frequency of compounding, and *i* is the periodic rate $\left(i=\frac{r}{k}\right)$.

3. COMPOUND INTEREST FORMULA

A principal *P*, earning compound interest will grow to a future value *FV* according to the formula

$$FV=P(1+i)^{kn}$$

4. EFFECTIVE RATE OF INTEREST

The effective rate of interest *R* for an account is given by the formula $R=(1+i)^k-1$

5. PRESENT VALUE

The present value *PV* that must be deposited now to provide a future value *FV* is given by the formula

$$PV=FV(1+i)^{-kn}$$

6. FUTURE VALUE OF AN ANNUITY

The future value *FV* of an ordinary annuity with deposits of *P* dollars is given by the formula

$$FV=\frac{P\left[(1+i)^{kn}-1\right]}{i}$$

7. SINKING FUND PAYMENT

For an annuity to provide a future value *FV*, the regular payment *P* is given by the formula

$$P=\frac{FVi}{(1+i)^{kn}-1}$$

8. PRESENT VALUE OF AN ANNUITY

The present value *PV* of an annuity with payments of *P* dollars is given by the formula

$$PV=\frac{P\left[1-(1+i)^{-kn}\right]}{i}$$

9. INSTALLMENT PAYMENTS

The periodic payment *P* required to repay an amount *A* is given by

$$P=\frac{Ai}{1-(1+i)^{-kn}}$$