Managerial Finance

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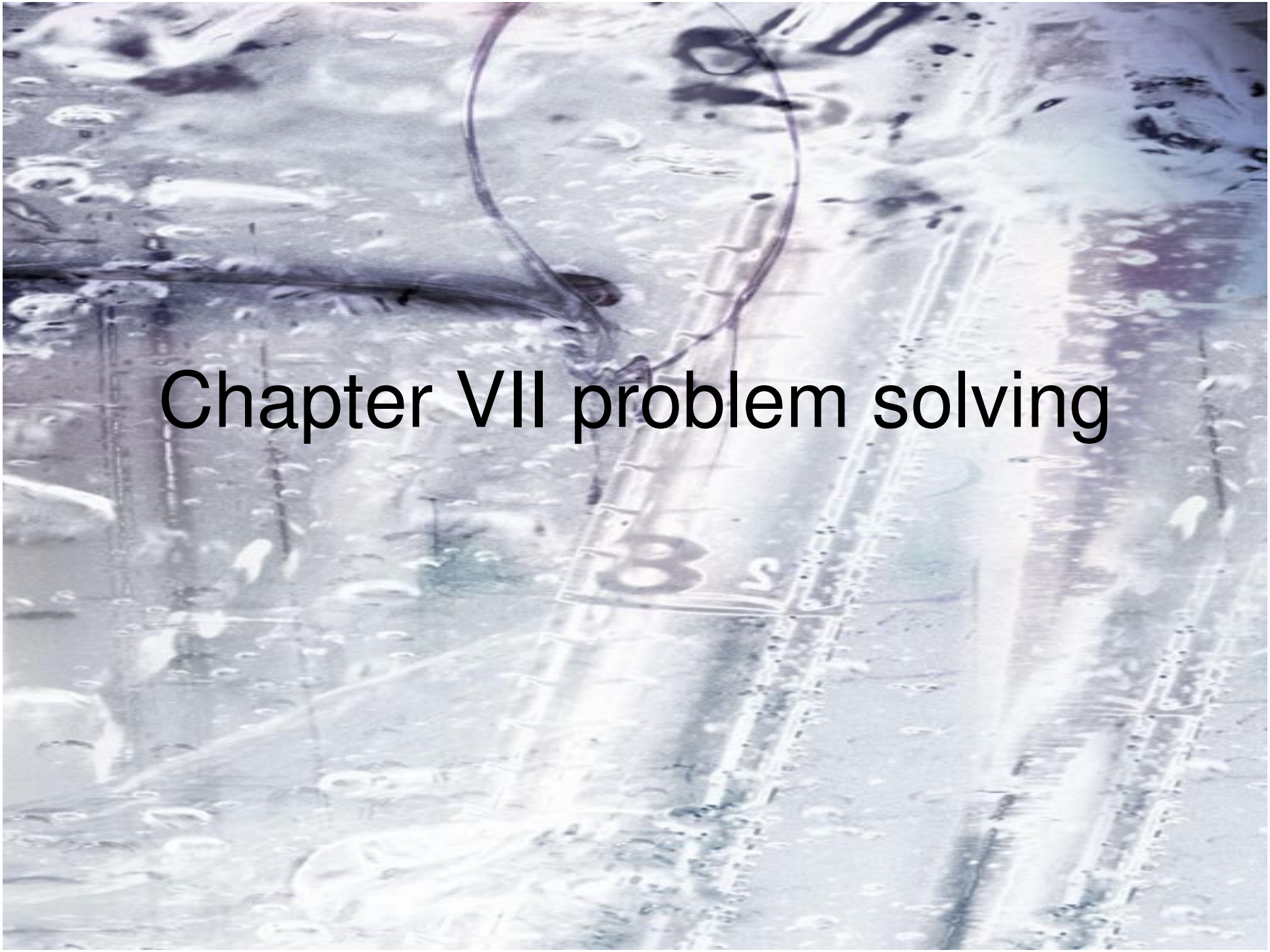

Chapter VII problem solving

Problem 7-1

- $1.5 per share
- Growth is expected to be 5% for next 3 years, and then 10% a year
- What is the expected dividends for the next 5 year?

Answer

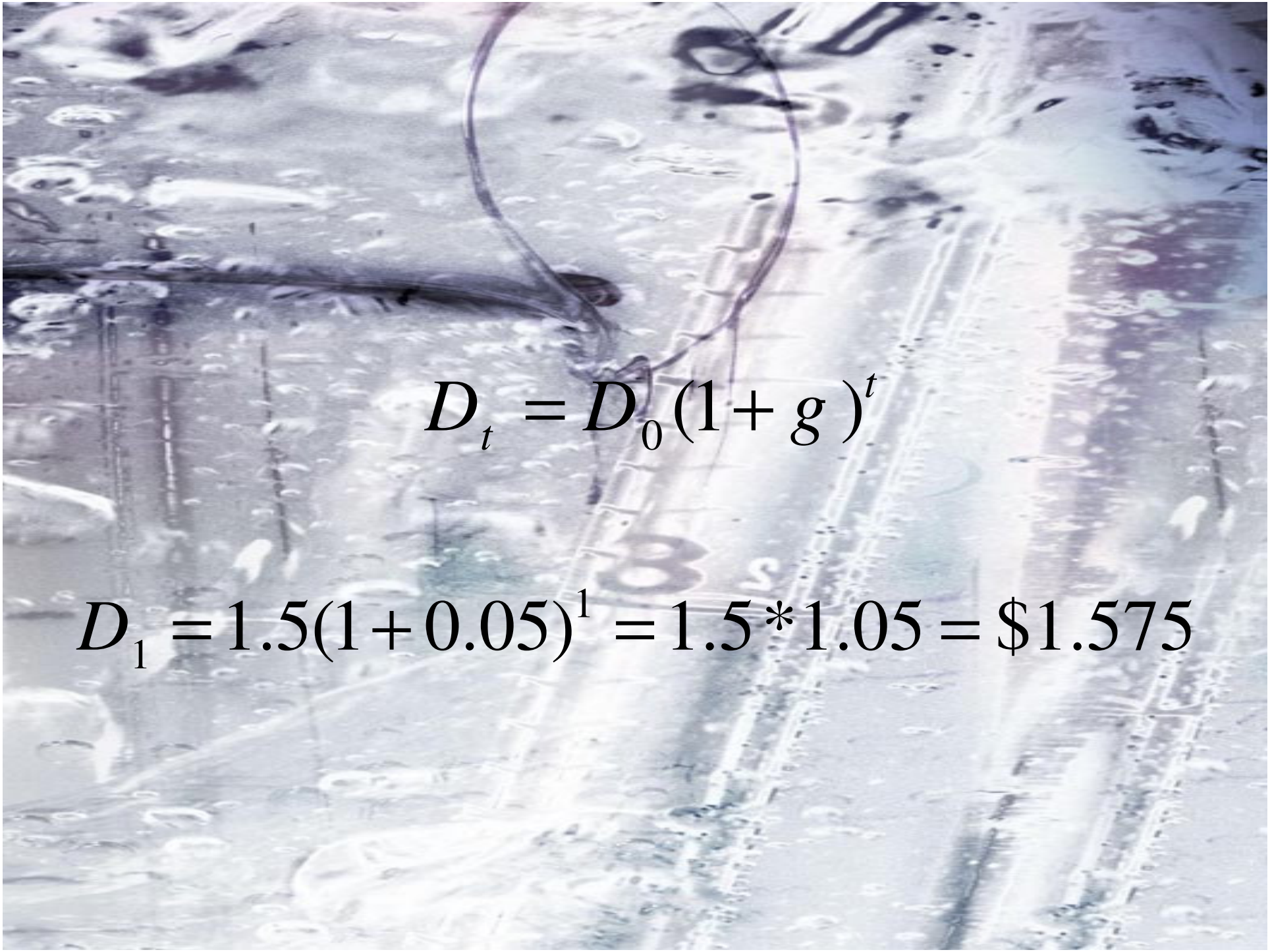
$$D_t = D_0(1+g)^t$$

Year t

Dividend at year t

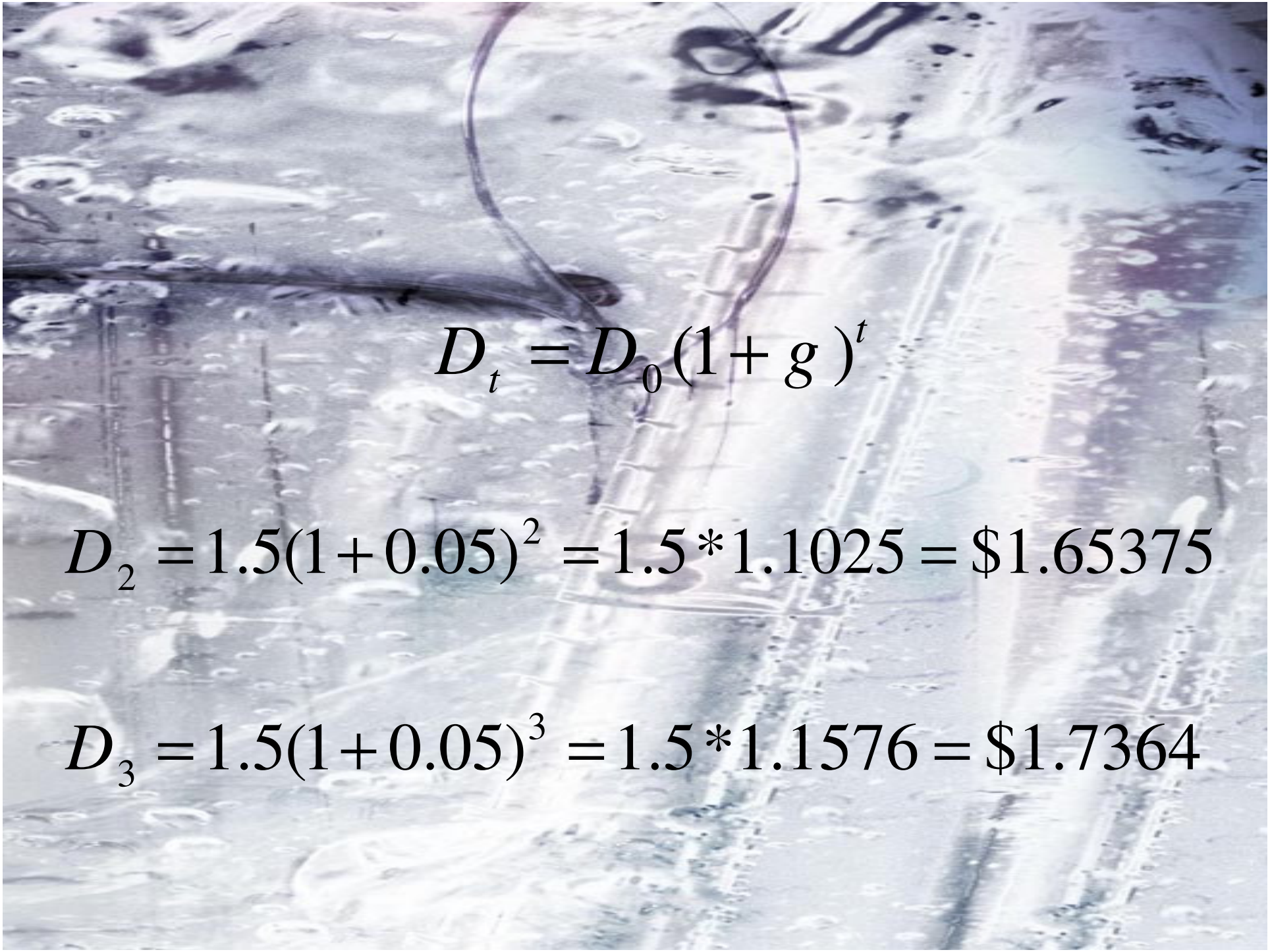
Last dividend received

Expected growth rate



$$D_t = D_0(1+g)^t$$

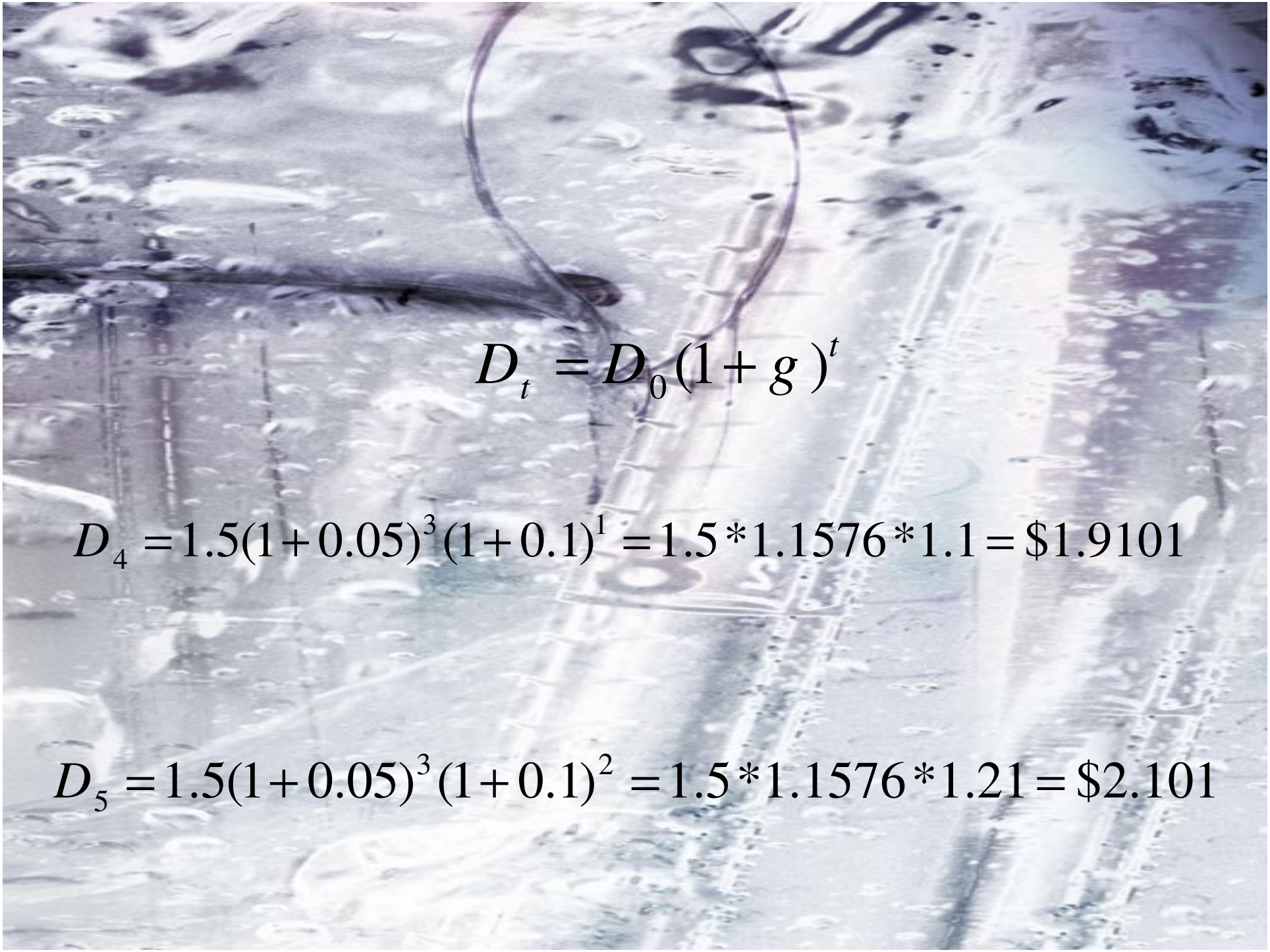
$$D_1 = 1.5(1+0.05)^1 = 1.5*1.05 = \$1.575$$



$$D_t = D_0(1+g)^t$$

$$D_2 = 1.5(1+0.05)^2 = 1.5*1.1025 = \$1.65375$$

$$D_3 = 1.5(1+0.05)^3 = 1.5*1.1576 = \$1.7364$$



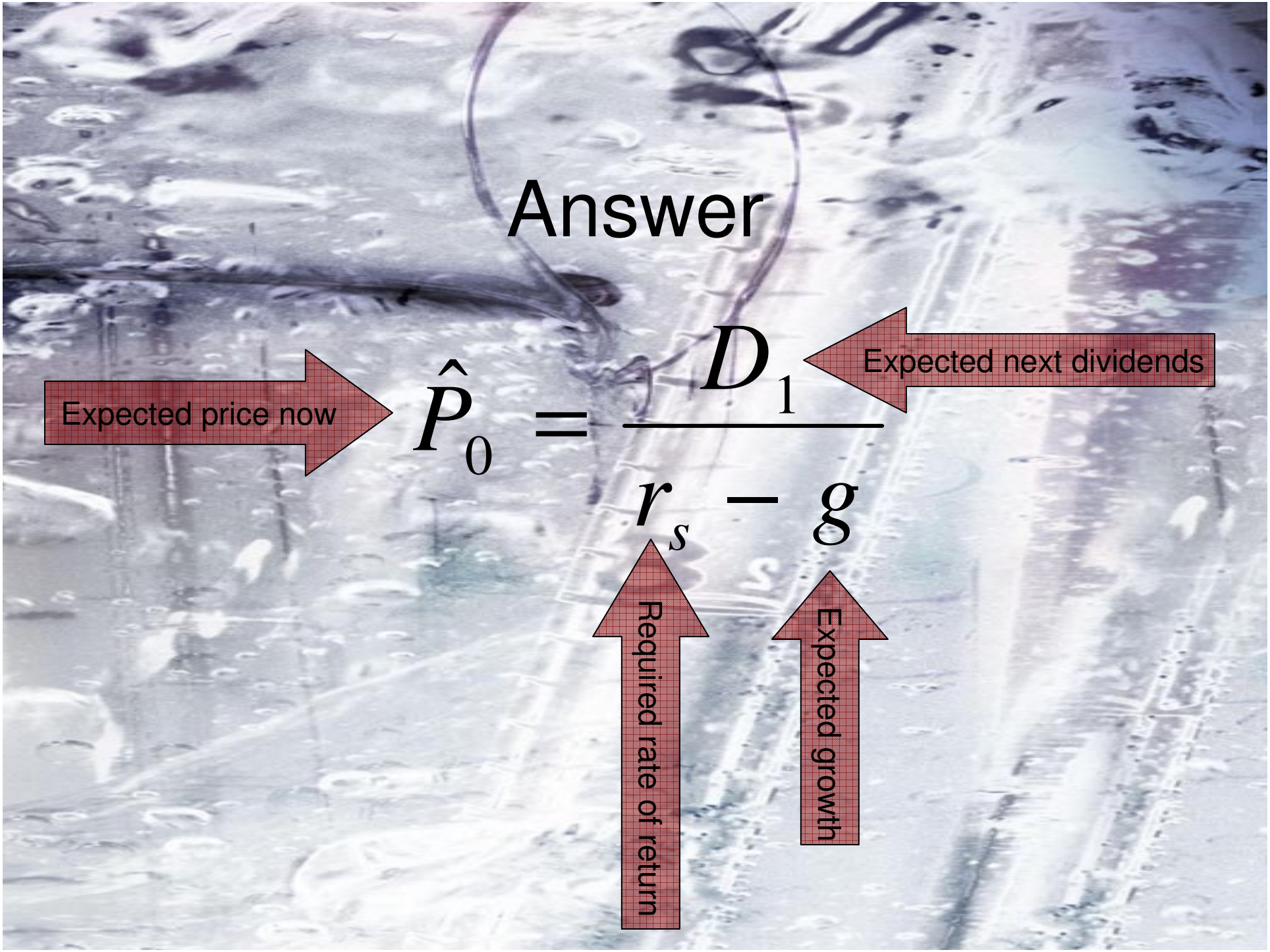
$$D_t = D_0(1+g)^t$$

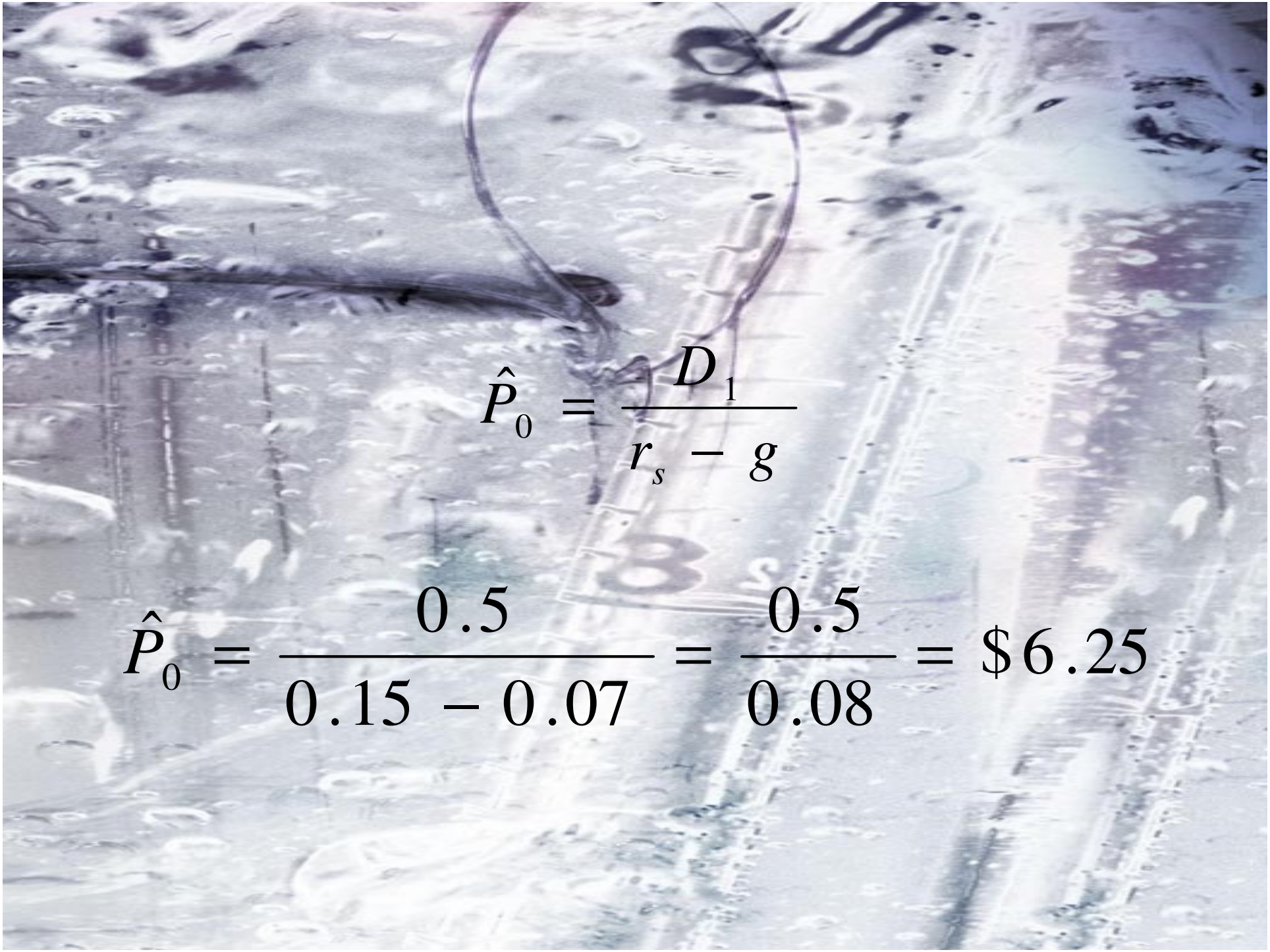
$$D_4 = 1.5(1+0.05)^3(1+0.1)^1 = 1.5*1.1576*1.1 = \$1.9101$$

$$D_5 = 1.5(1+0.05)^3(1+0.1)^2 = 1.5*1.1576*1.21 = \$2.101$$

Problem 7-2

- Expected dividend is $0.5
- Expected growth is 7%
- Required rate of return in 15%
- What is the stock value?


Answer
$\hat{P}_0 = \frac{D_1}{r_s - g}$
Expected price now
Expected next dividends
Required rate of return
Expected growth



$$\hat{P}_0 = \frac{D_1}{r_s - g}$$

$$\hat{P}_0 = \frac{0.5}{0.15 - 0.07} = \frac{0.5}{0.08} = \$6.25$$

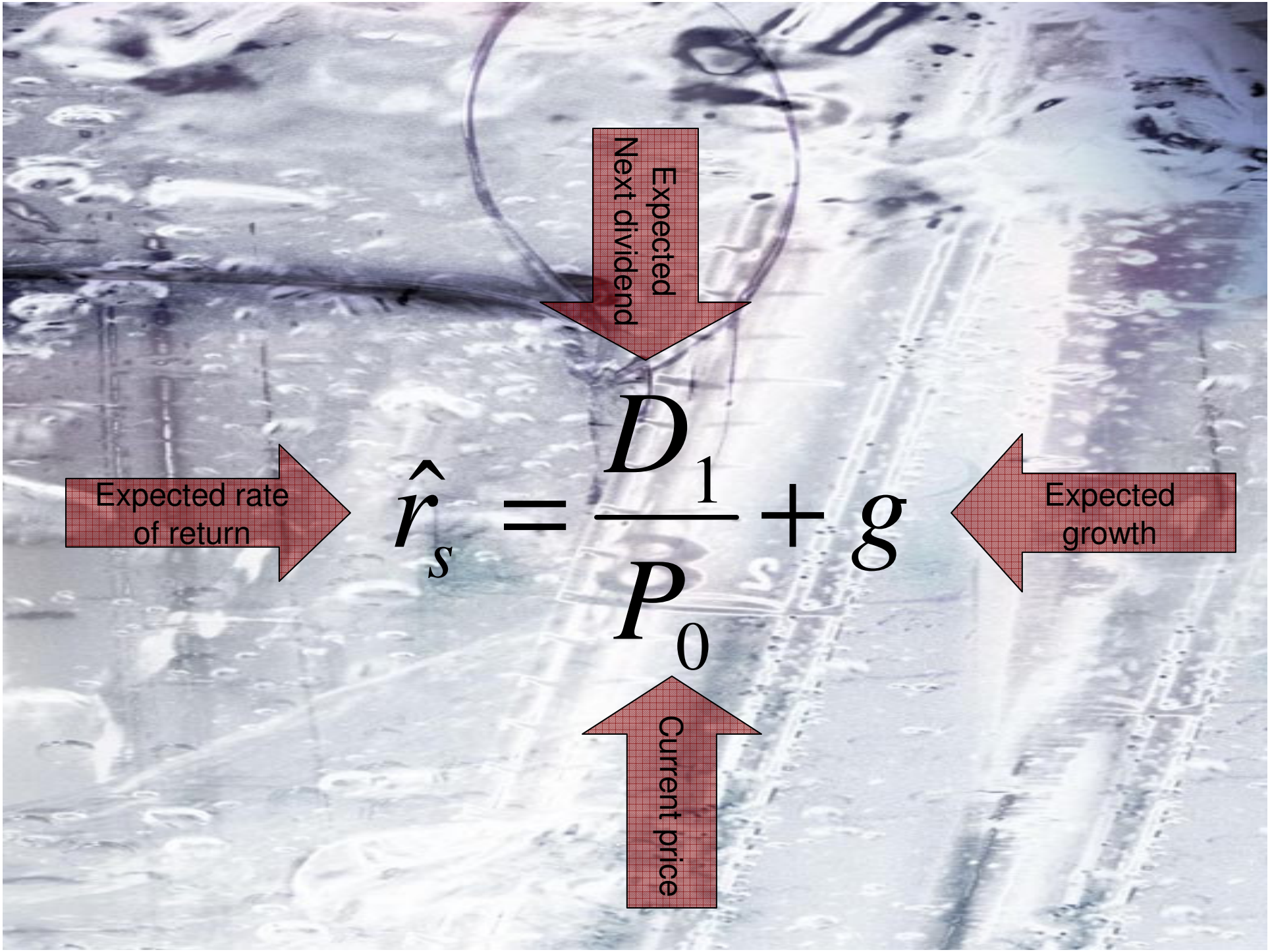
Problem 7-3

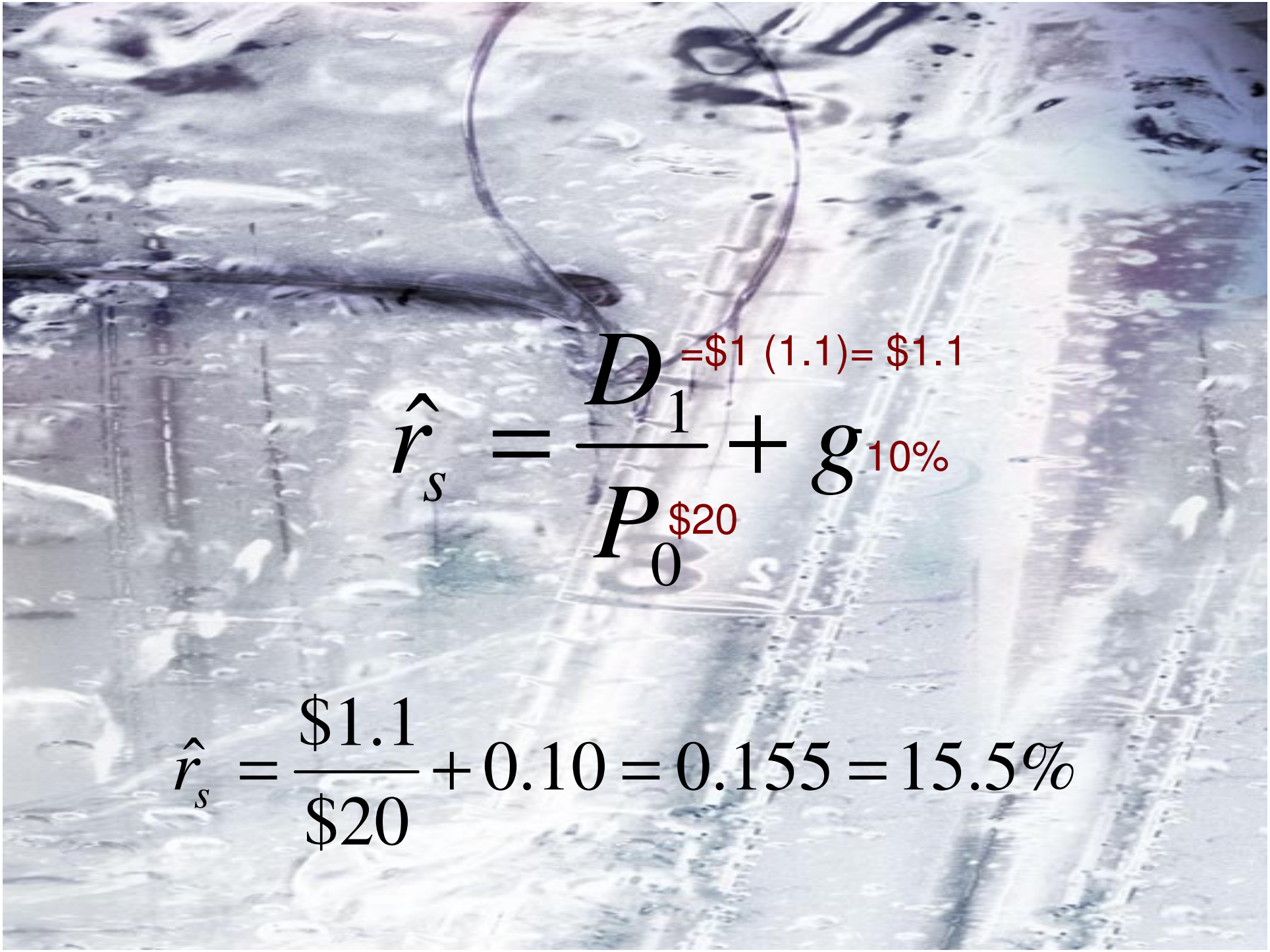
- Current stock price is $20
- Paid dividends is $1
- Expected growth is 10%
- What is price after one year? What is the required rate of return?

Answer

$$\hat{P}_1 = P_0(1+g)$$

=$20 (1+0.1)=$20 *1.1=$22

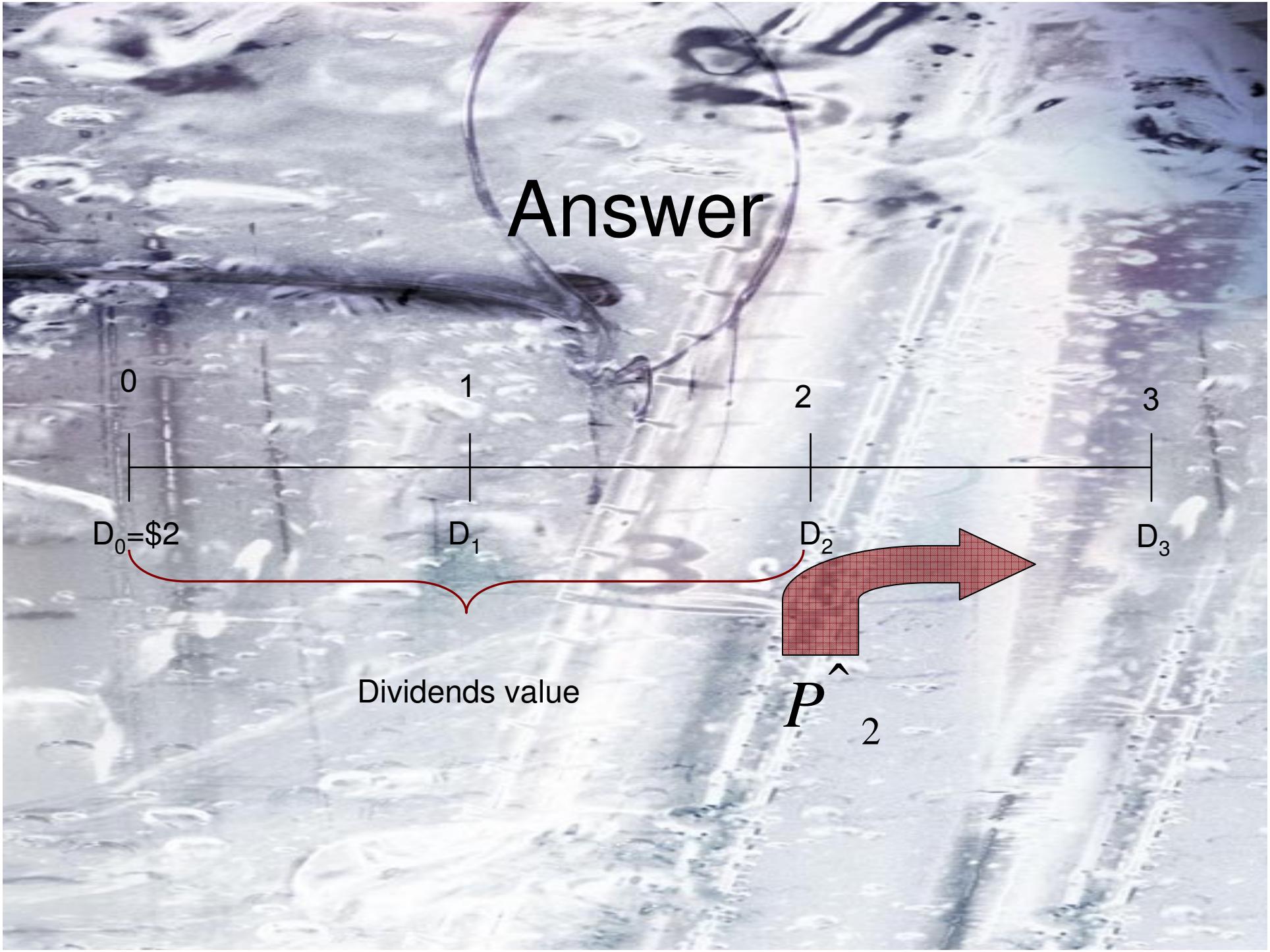

Expected Next dividend
Expected rate of return
$\hat{r}_s = \frac{D_1}{P_0} + g$
Expected growth
Current price

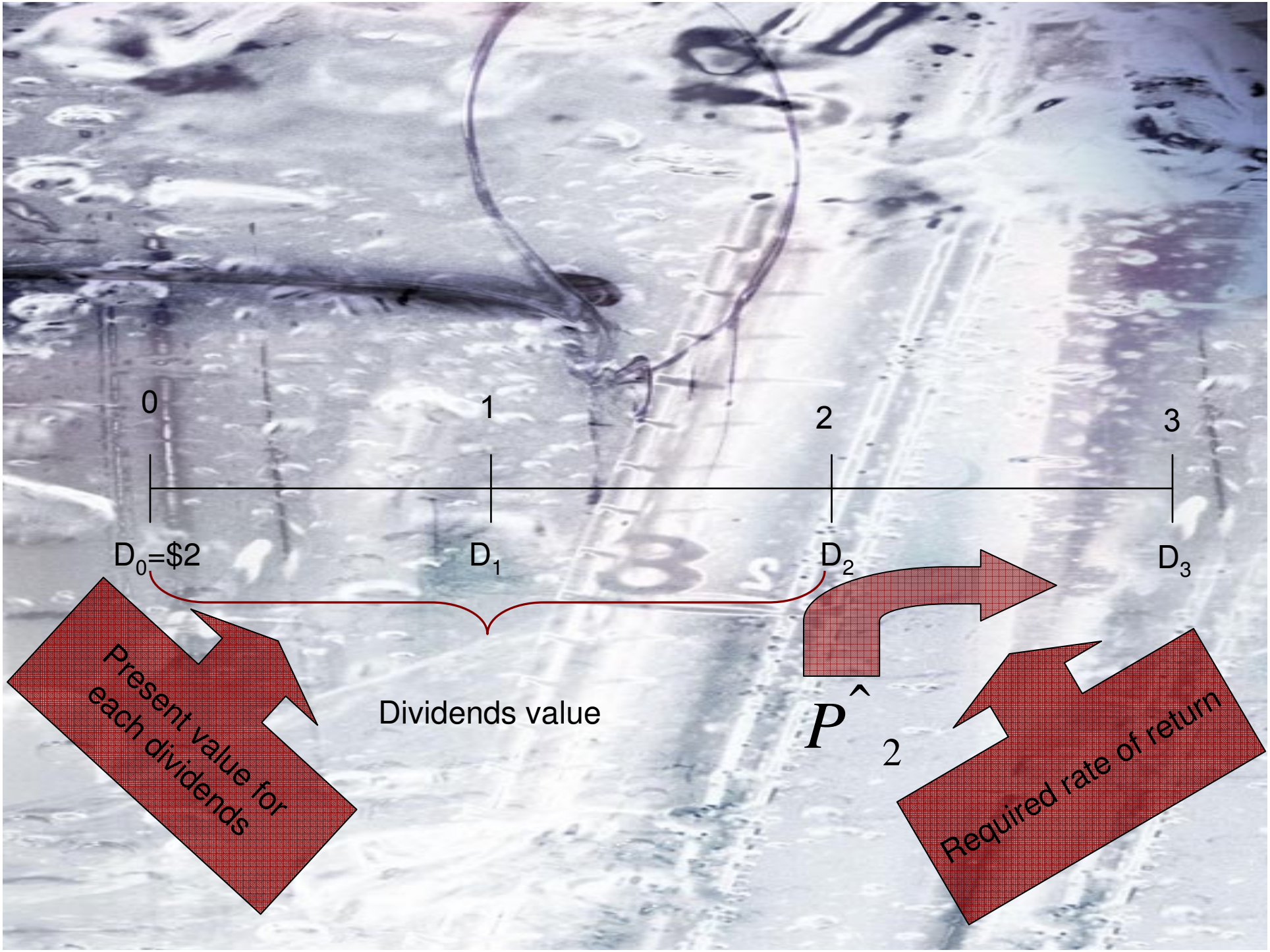

$\hat{r}_s = \frac{D_1}{P_0} + g$
=$1 (1.1)= $1.1
$20
10%
$\hat{r}_s = \frac{\$1.1}{\$20} + 0.10 = 0.155 = 15.5\%$

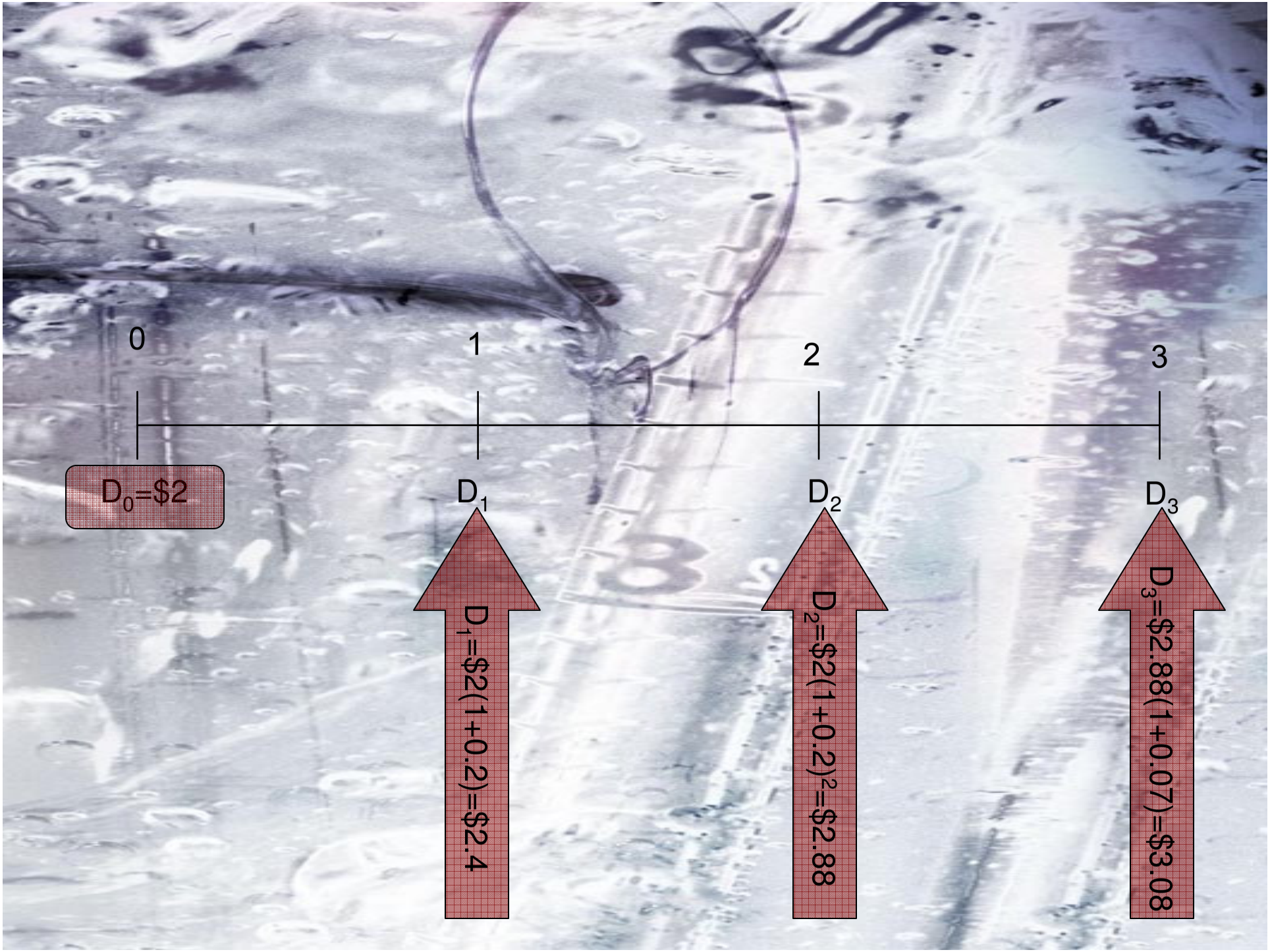
Problem 7-5

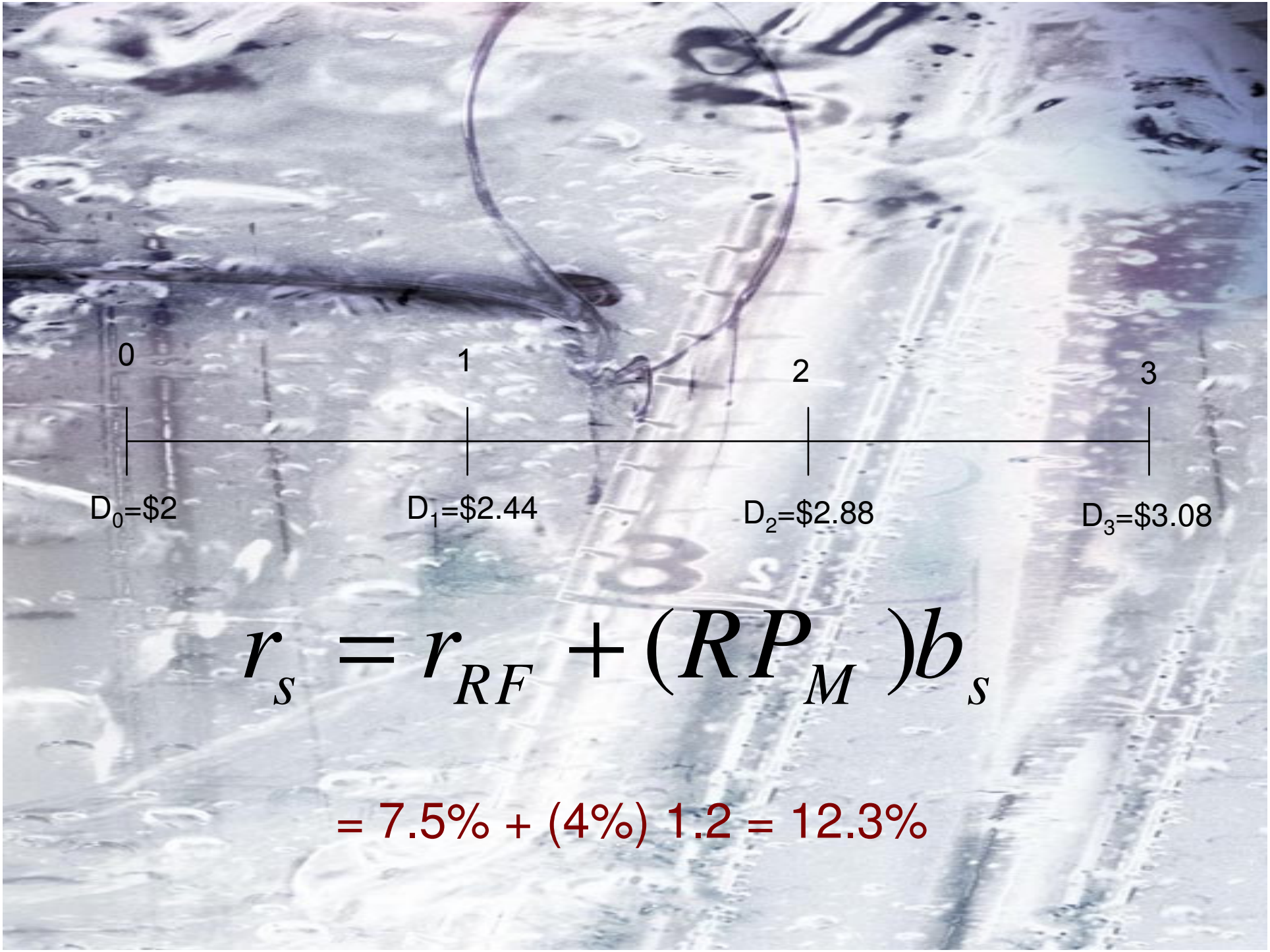
- Current dividend is $2
- Growth is 20% for 2 years, and then 7%
- Stock beta is 1.2
- Risk free rate is 7.5%
- Market risk premium is 4%
- What is the estimated current stock price?

Answer



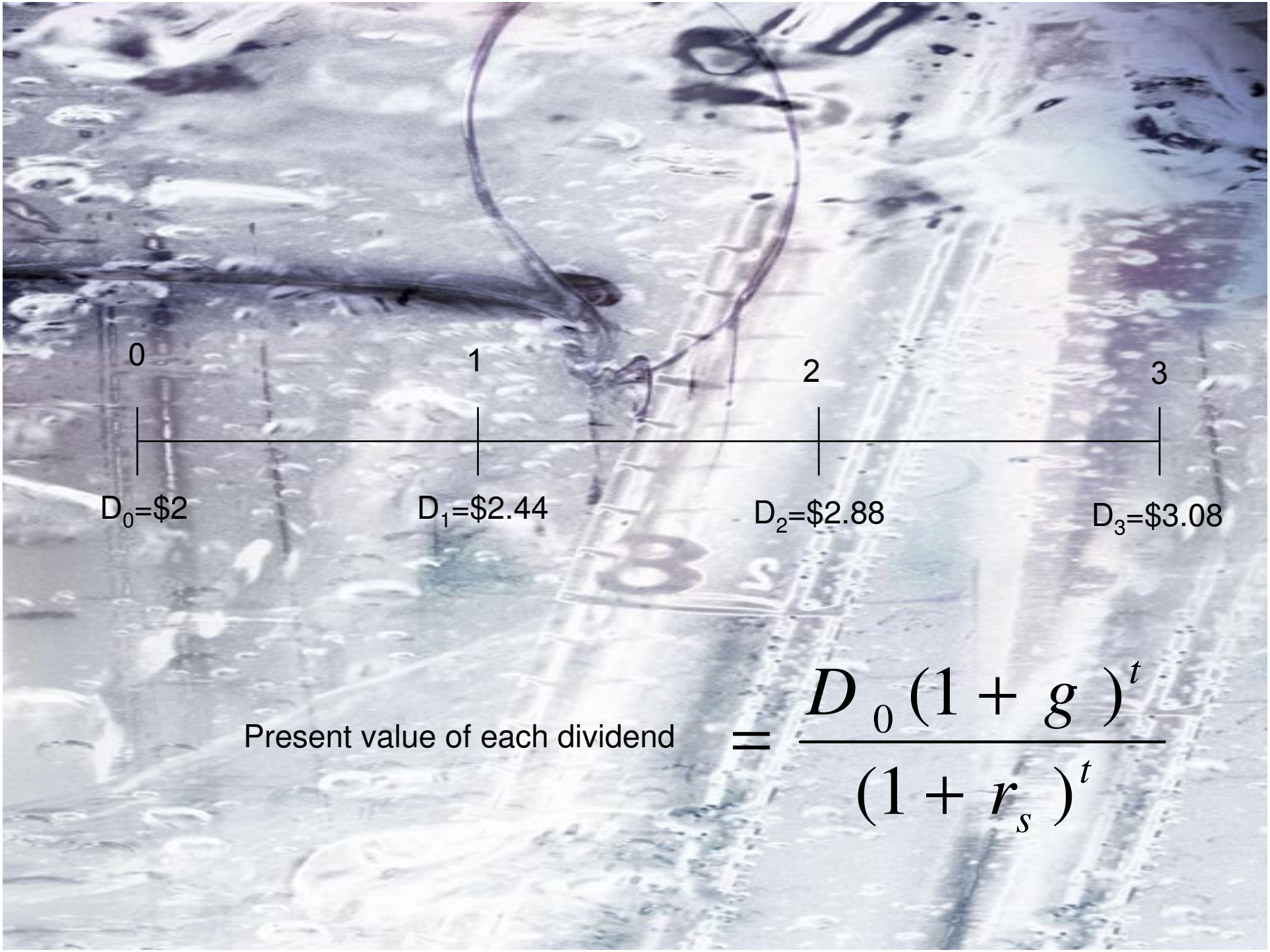

0
1
2
3
D_0=$2
D_1
D_2
D_3
Present value for each dividends
Dividends value
$\hat{P}_2$
Required rate of return


0
1
2
3
D_0=$2
D_1
D_2
D_3
D_1=$2(1+0.2)=$2.4
D_2=$2(1+0.2)^2=$2.88
D_3=$2.88(1+0.07)=$3.08

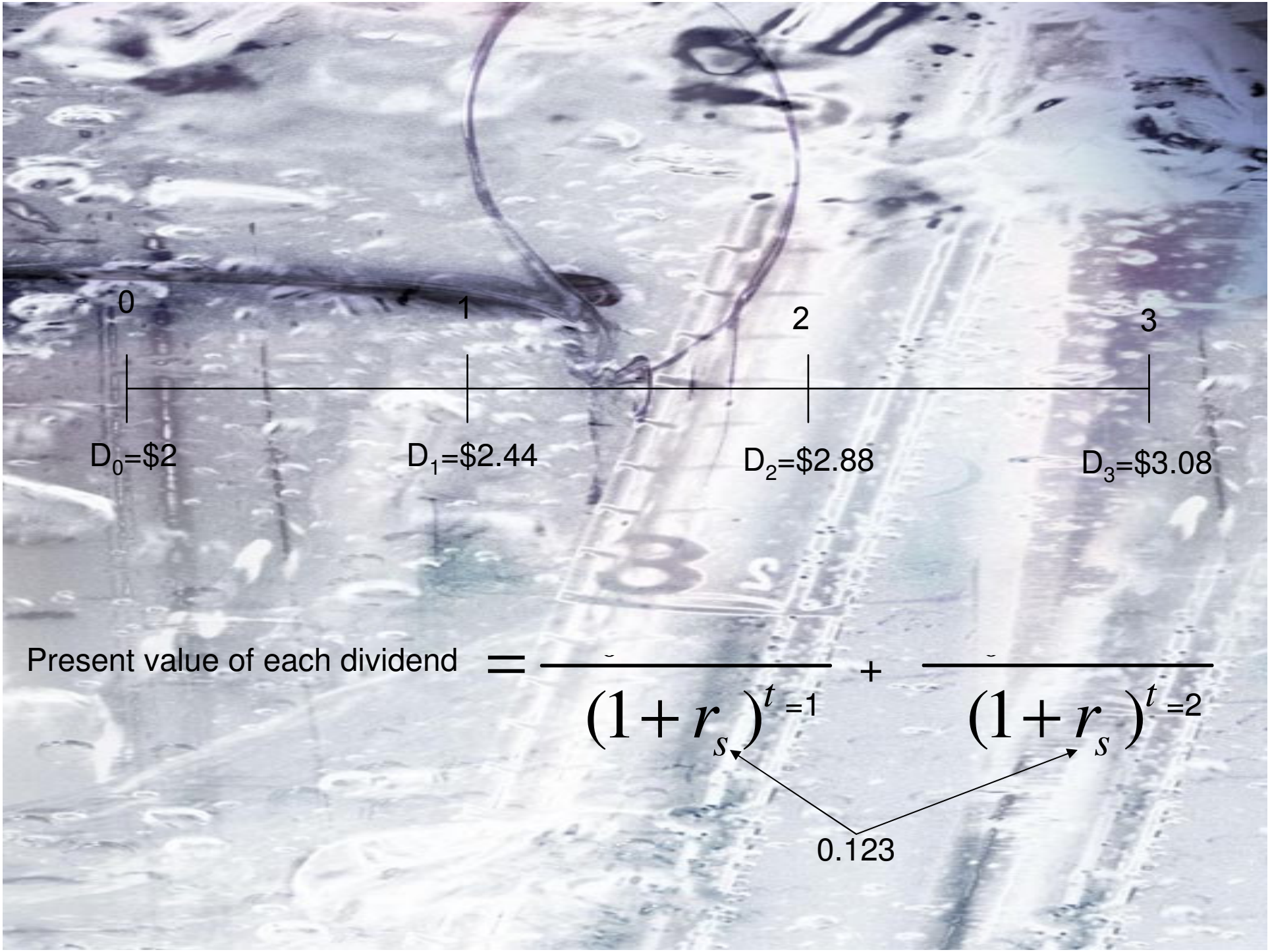


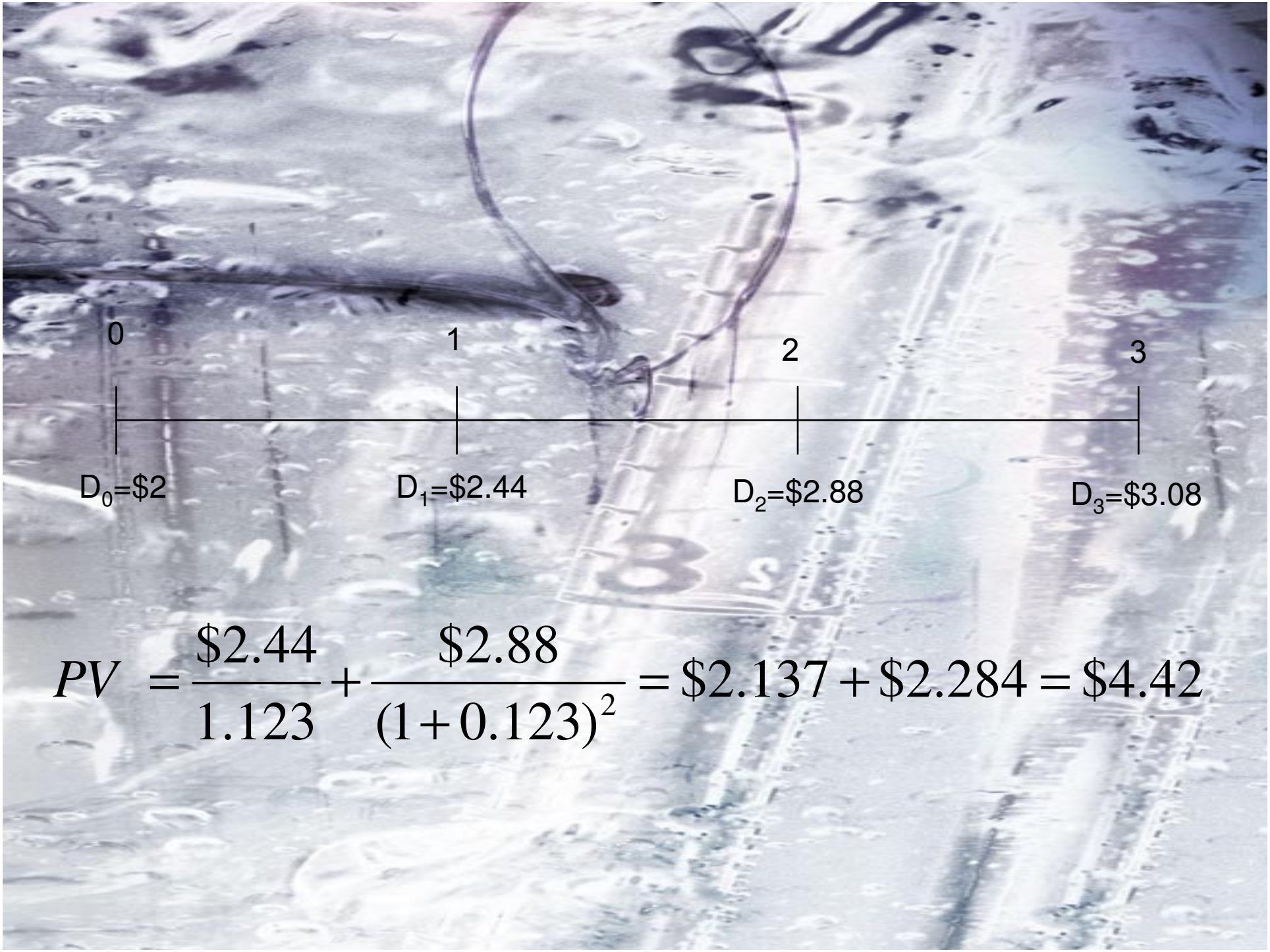
$$r_s = r_{RF} + (RP_M)b_s$$

= 7.5% + (4%) 1.2 = 12.3%

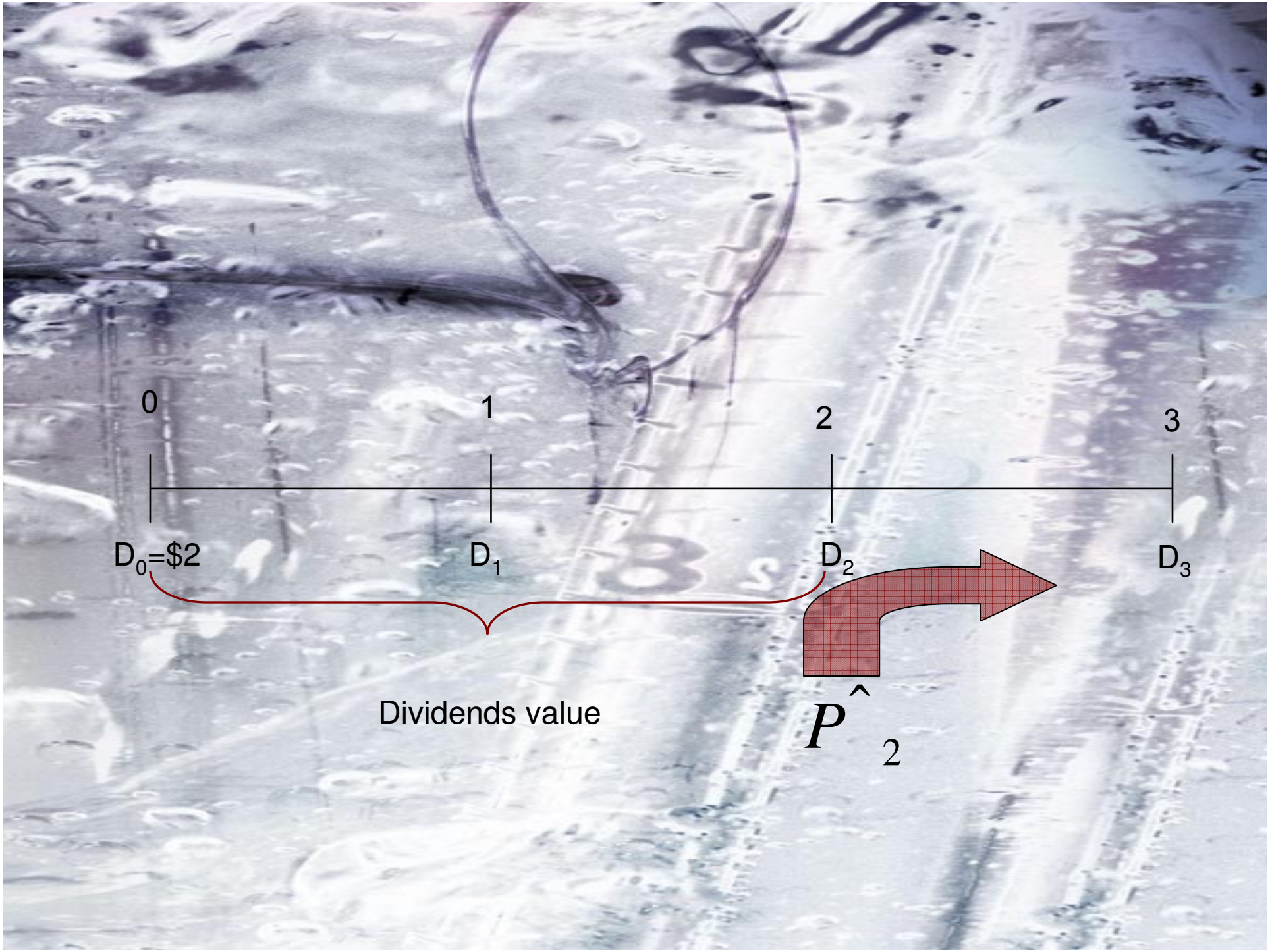


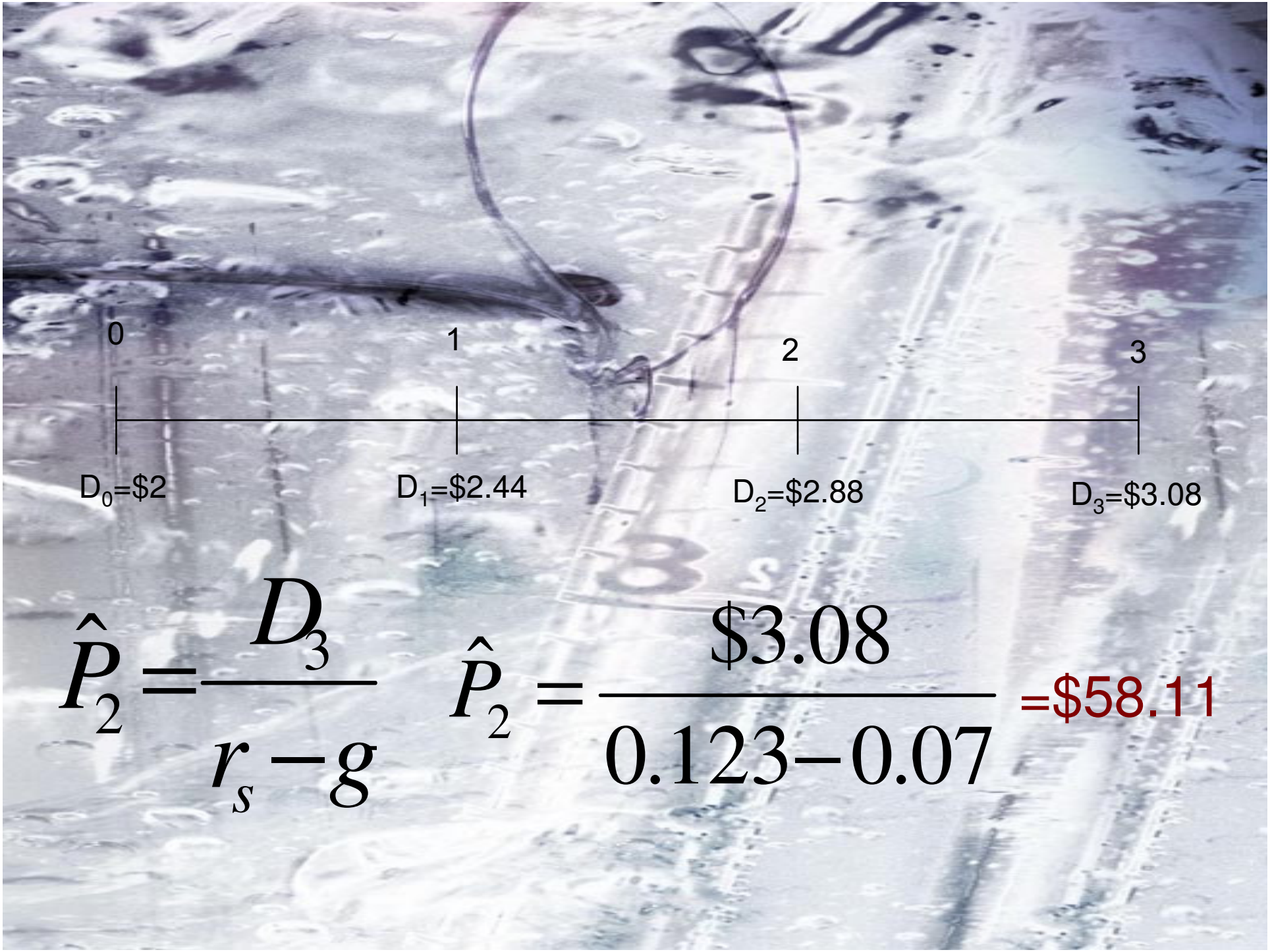
Present value of each dividend $= \dfrac{D_0(1+g)^t}{(1+r_s)^t}$


0
1
2
3
D_0=$2
D_1=$2.44
D_2=$2.88
D_3=$3.08
Present value of each dividend = $\frac{\cdot}{(1+r_s)^{t=1}} + \frac{\cdot}{(1+r_s)^{t=2}}$
0.123

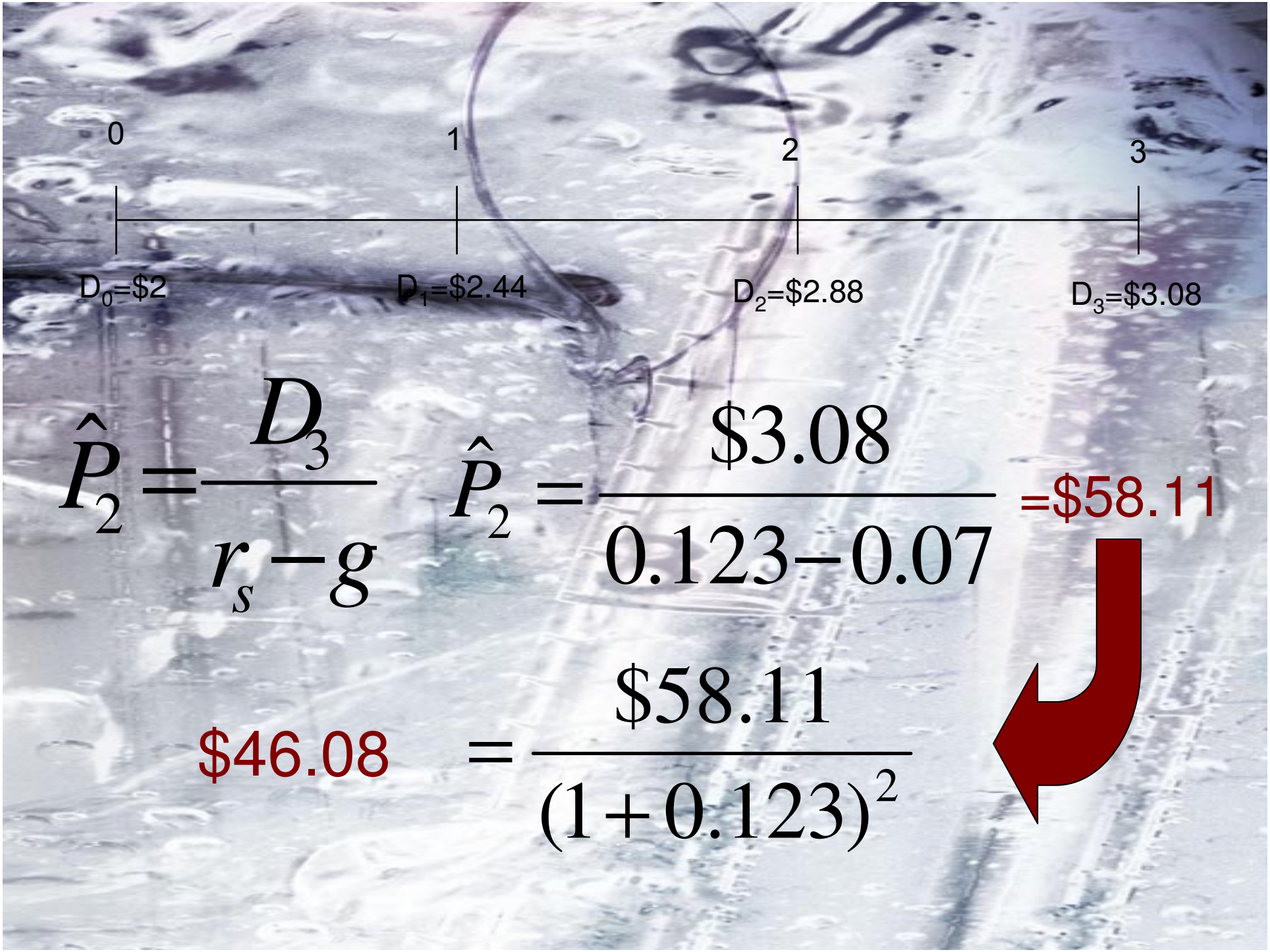


$$PV = \frac{\$2.44}{1.123} + \frac{\$2.88}{(1+0.123)^2} = \$2.137 + \$2.284 = \$4.42$$


0
1
2
3
D_0=$2
D_1
D_2
D_3
Dividends value
$\hat{P}_2$

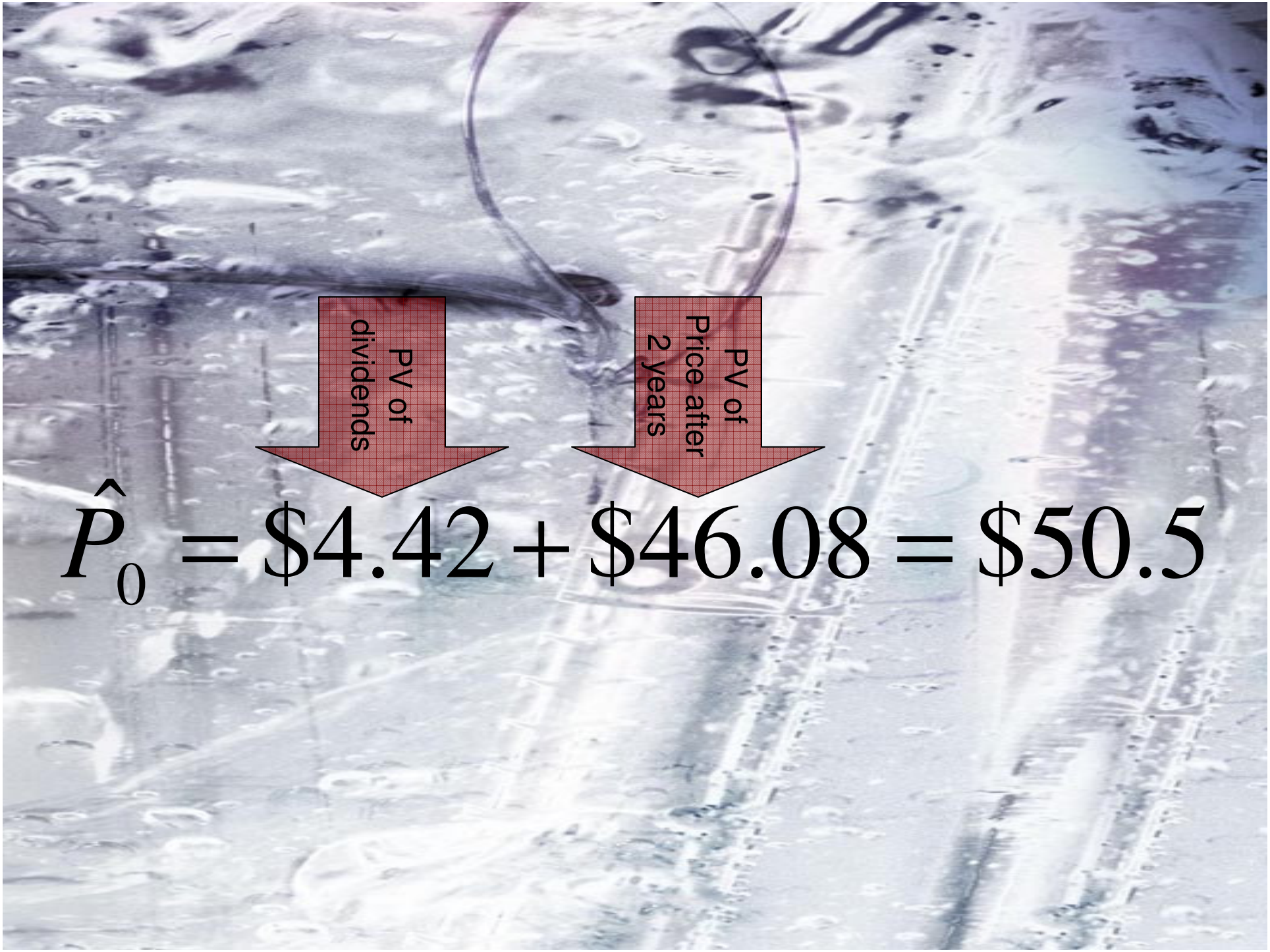


$$\hat{P}_2 = \frac{D_3}{r_s - g} \qquad \hat{P}_2 = \frac{\$3.08}{0.123 - 0.07} = \$58.11$$



$$\hat{P}_2 = \frac{D_3}{r_s - g} \qquad \hat{P}_2 = \frac{\$3.08}{0.123 - 0.07} = \$58.11$$

$$\$46.08 = \frac{\$58.11}{(1+0.123)^2}$$


PV of dividends
PV of Price after 2 years
$\hat{P}_0 = \$4.42 + \$46.08 = \$50.5$