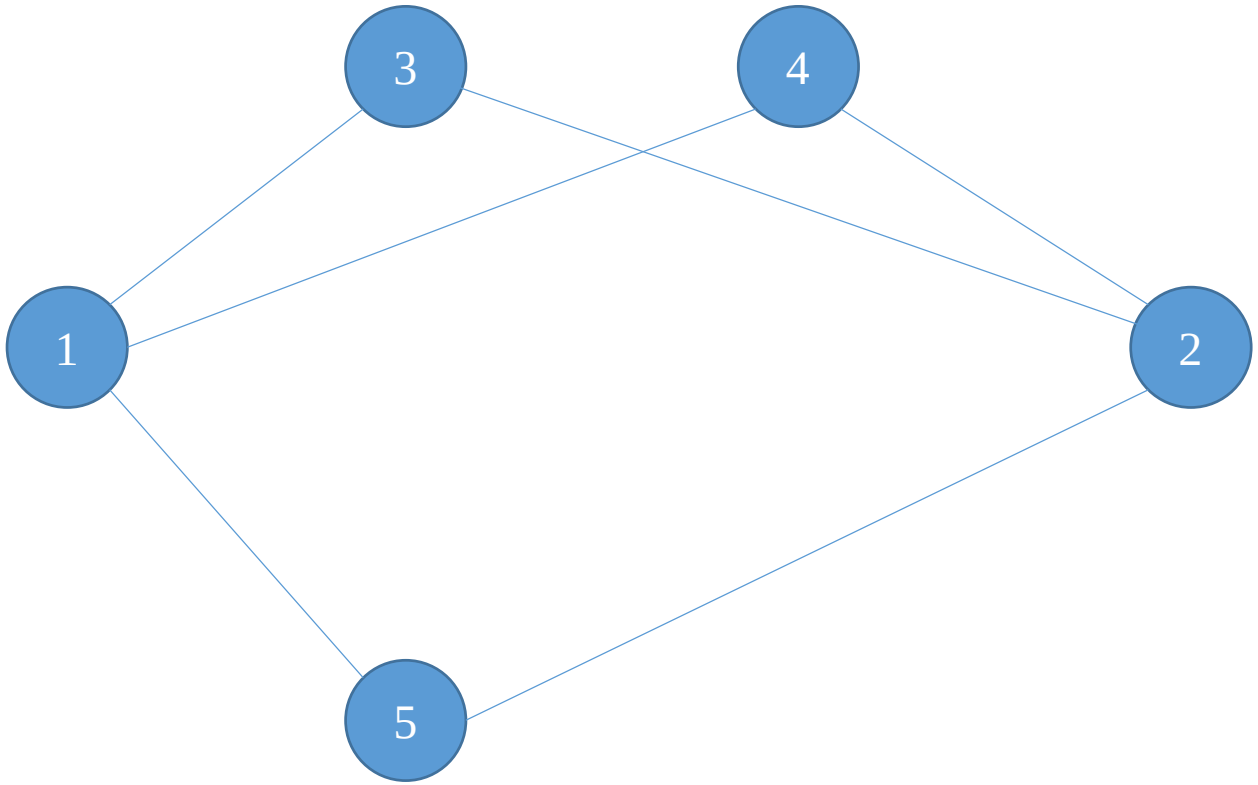
Алгоритмы нахождения наибольшего независимого множества:

«Поиск с возвратами» (backtraking)


3
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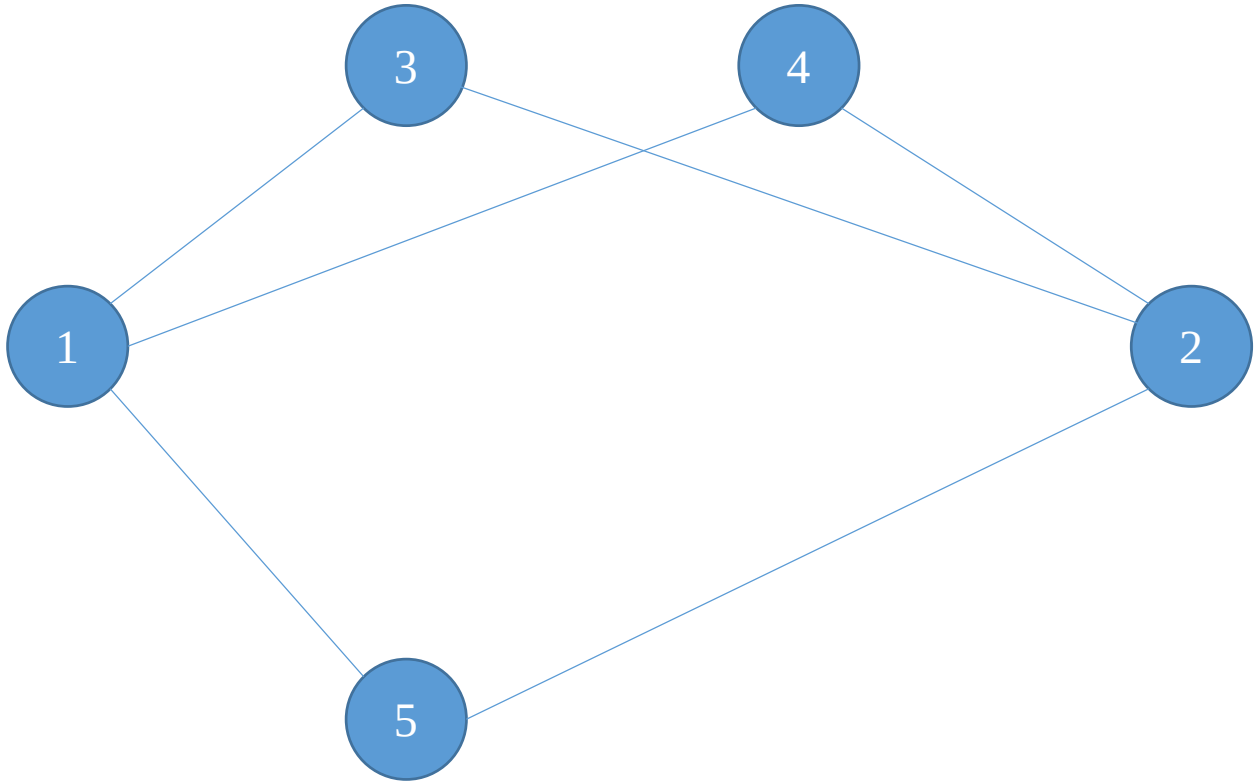


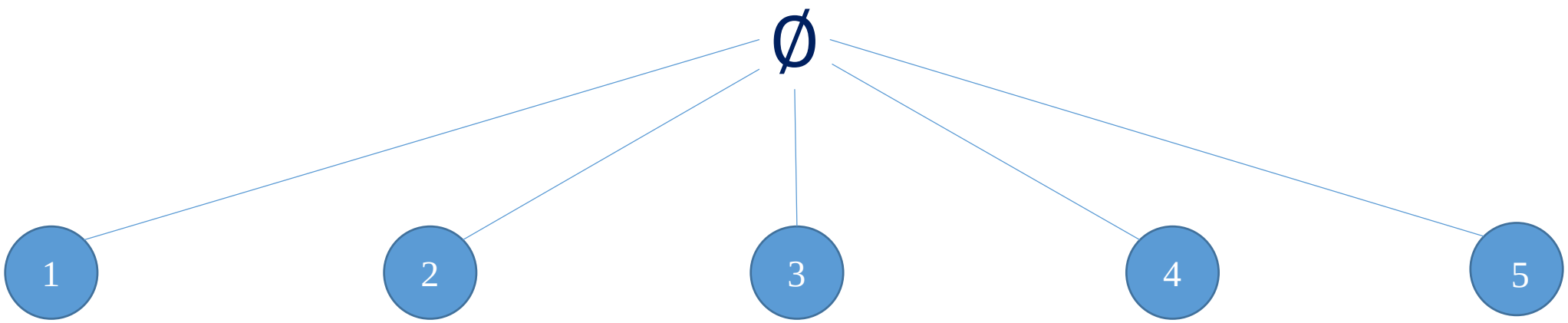
$\Gamma^*(1) = \{\ 1, 3, 4, 5\ \}$

$\Gamma^*(2) = \{\ 2, 3, 4, 5\ \}$

$\Gamma^*(3) = \{\ 1, 2, 3\ \}$

$\Gamma^*(4) = \{\ 1, 2, 4\ \}$

$\Gamma^*(5) = \{\ 1, 2, 5\ \}$


Ø
1
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3
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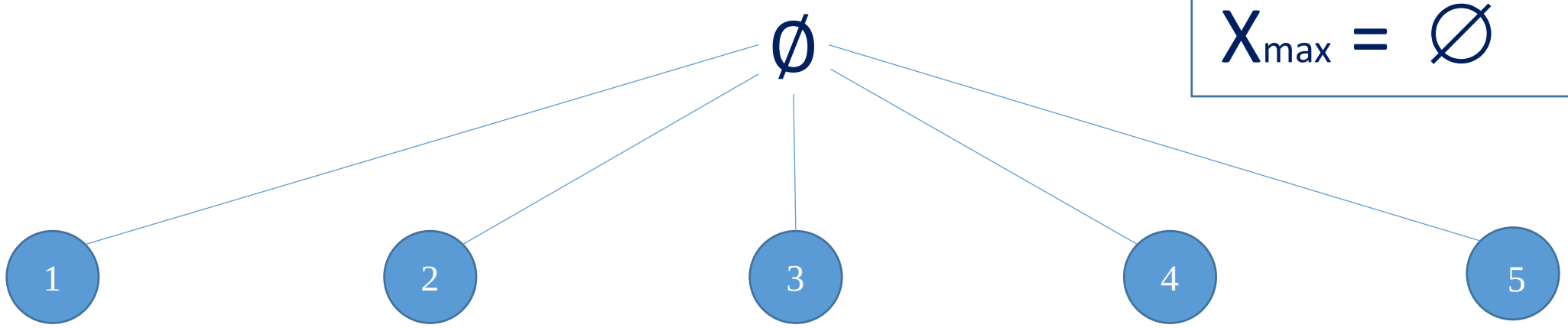


$X_{max} = \emptyset$

$S = \emptyset \qquad m = 0$

$T = \{ 1, 2, 3, 4, 5 \}$

$\Gamma^*(1) = \{\ 1, 3, 4, 5\ \}$

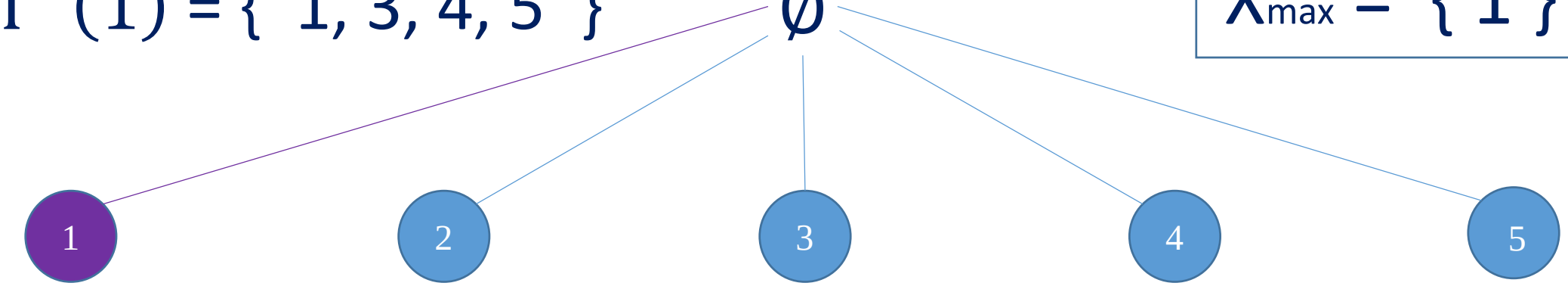
$\emptyset$

$X_{max} = \emptyset$

$S = S \cup \{\ 1\ \}$ $m = |\ S\ |$

$T = \{\ 1, 2, 3, 4, 5\ \} \setminus \Gamma^*(1)$

$\Gamma^*(1) = \{ 1, 3, 4, 5 \}$



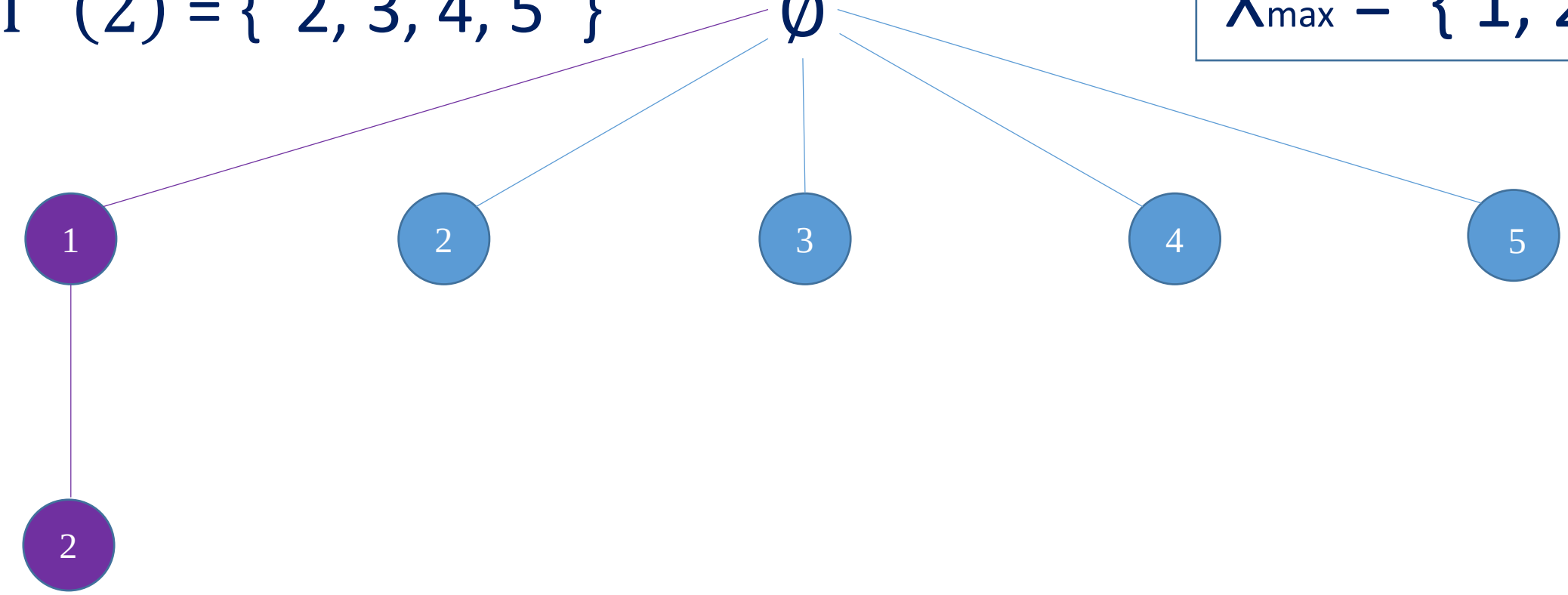
$X_{max} = \{ 1 \}$

$S = \{ 1 \}$ $m = 1$

$T = \{ 2 \}$

$\Gamma^*(2) = \{\ 2, 3, 4, 5\ \}$

$X_{max} = \{\ 1, 2\ \}$

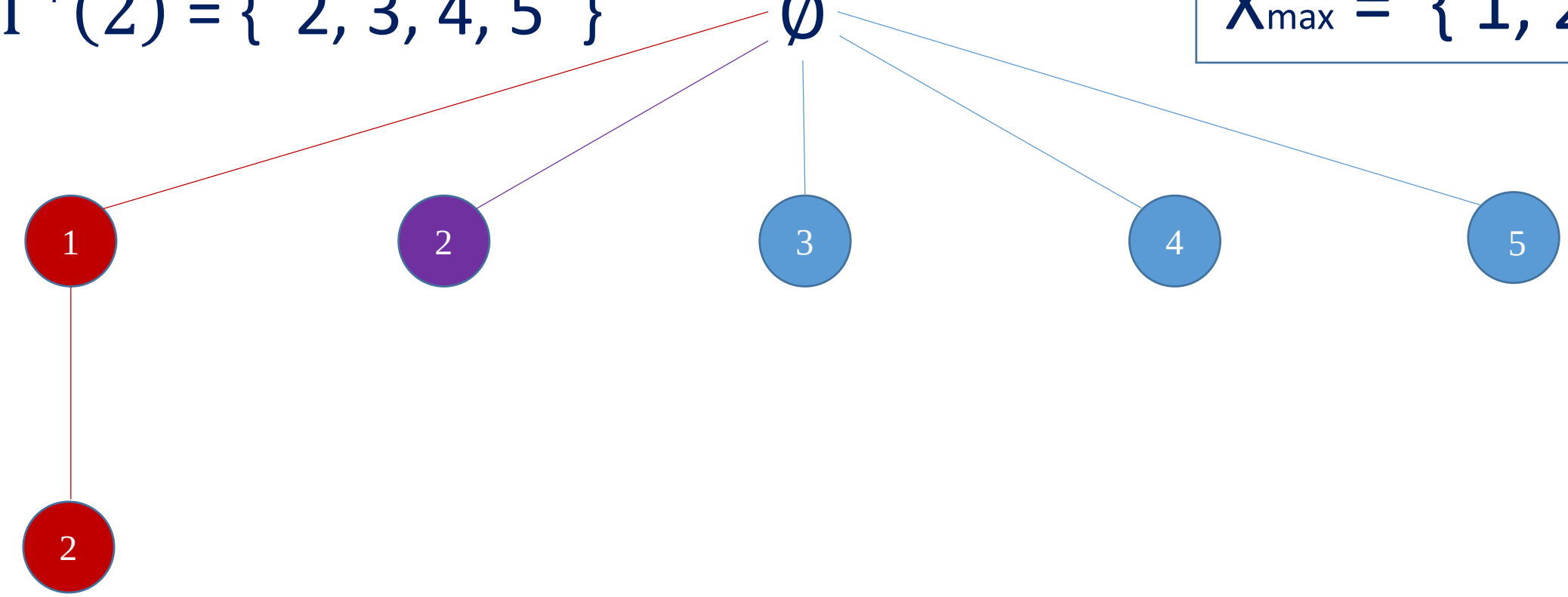


$S = \{\ 1, 2\ \}$ $m = 2$

$T = \varnothing$

$\Gamma^*(2) = \{\ 2, 3, 4, 5\ \}$

$X_{max} = \{\ 1, 2\ \}$

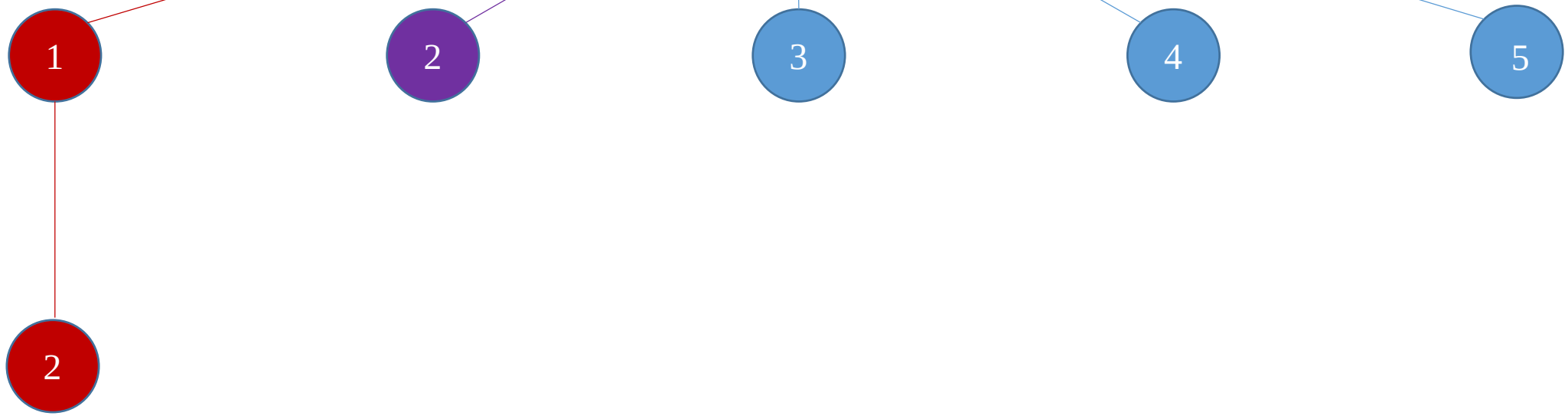


$S = S \cup \{\ 2\ \}\ \ m = |\ S\ |$

$T = \{\ 1, 2, 3, 4, 5\ \} \setminus \Gamma^*(2)$

$\Gamma^*(2) = \{\ 2, 3, 4, 5\ \}$

$X_{max} = \{\ 1, 2\ \}$

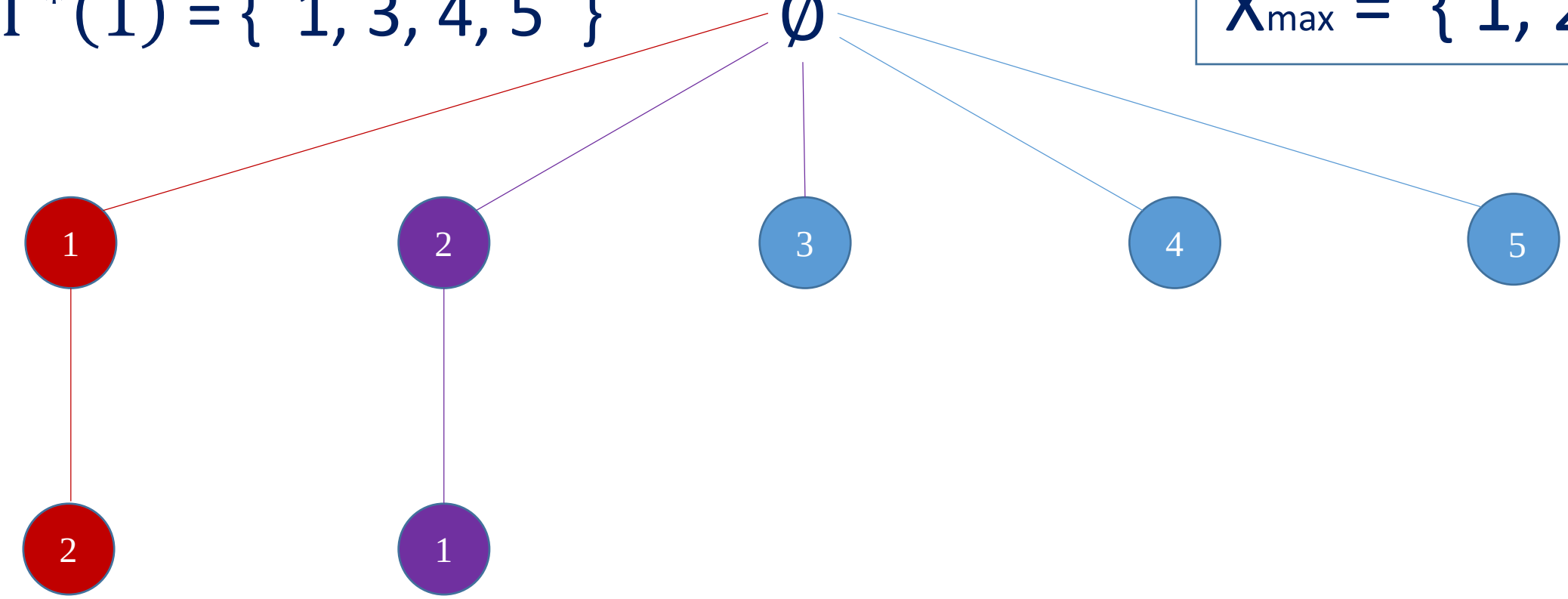


S = { 2 } m = 1

T = { 1 }

$\Gamma^*(1) = \{ 1, 3, 4, 5 \}$

$X_{max} = \{ 1, 2 \}$

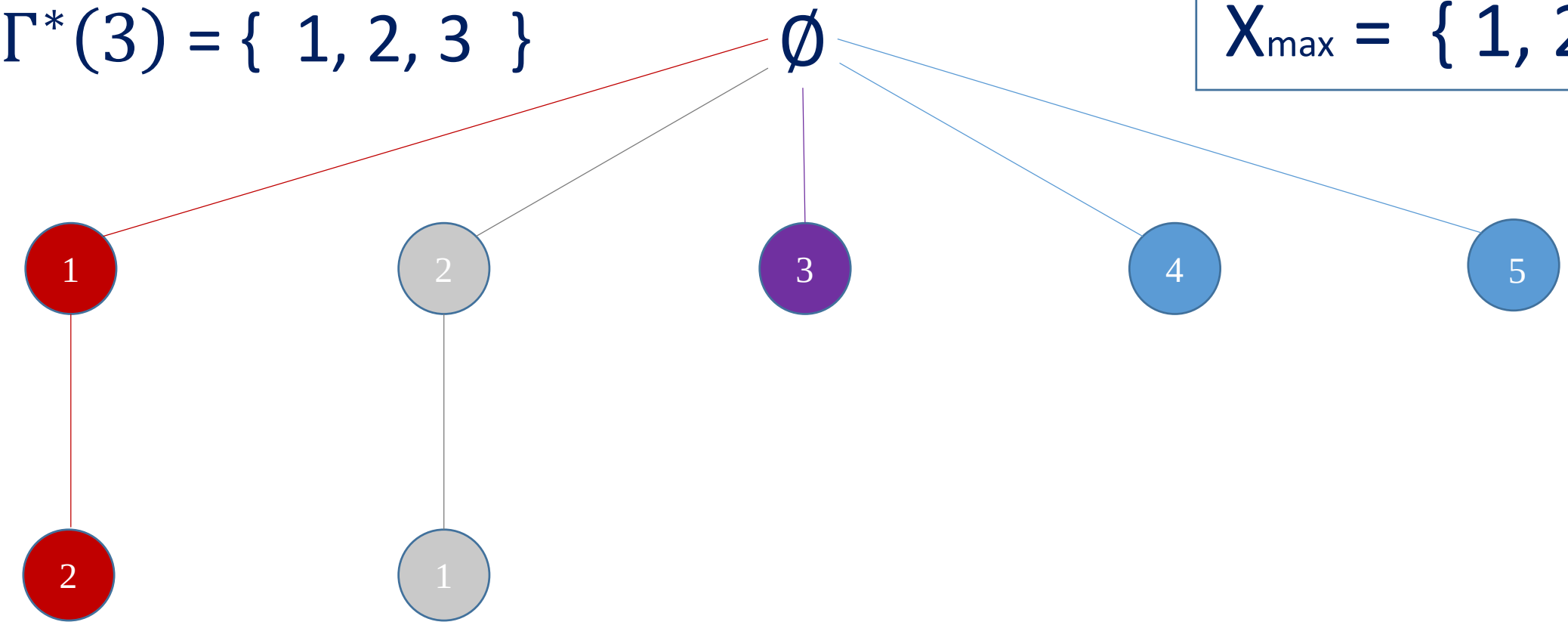


$S = \{ 2, 1 \}$ $m = 2$

$T = \varnothing$

$\Gamma^*(3) = \{ 1, 2, 3 \}$

$X_{max} = \{ 1, 2 \}$

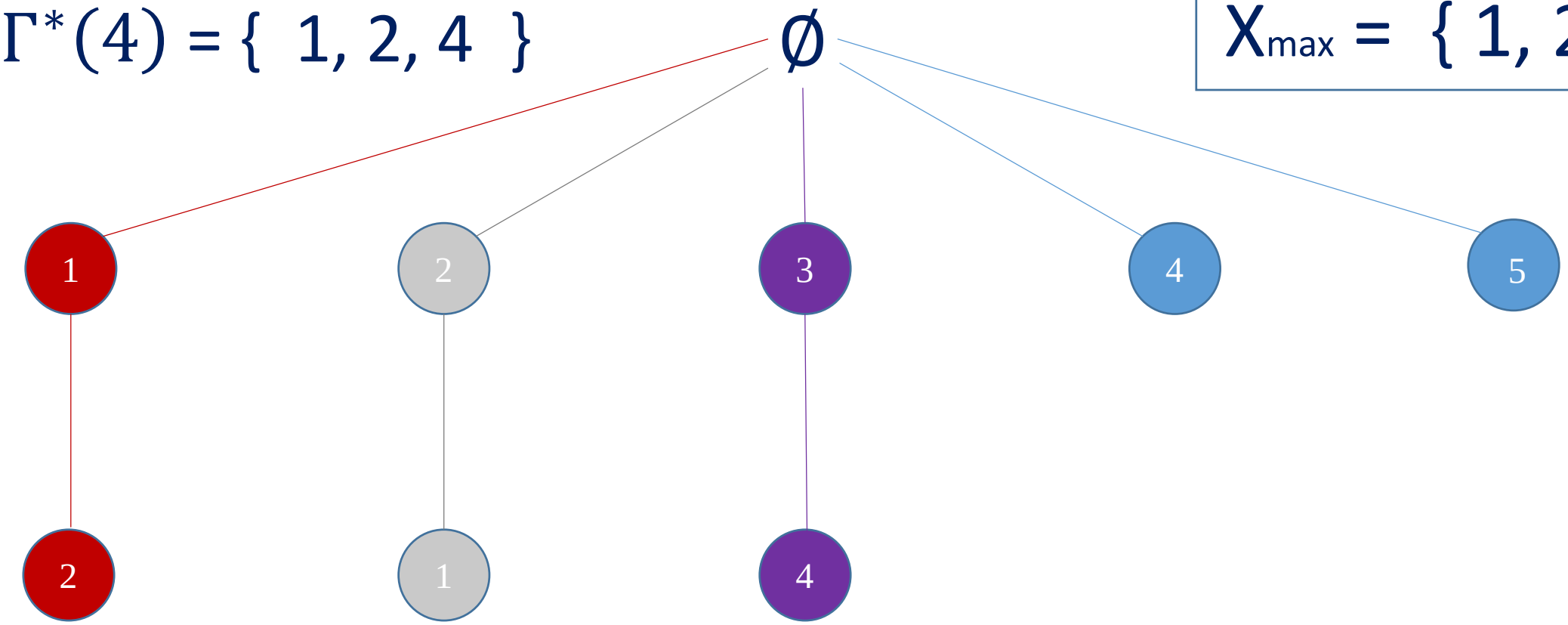


$S = \{ 3 \}$ $m = 1$

$T = \{ 4, 5 \}$

$\Gamma^*(4) = \{\ 1, 2, 4\ \}$

$X_{max} = \{\ 1, 2\ \}$

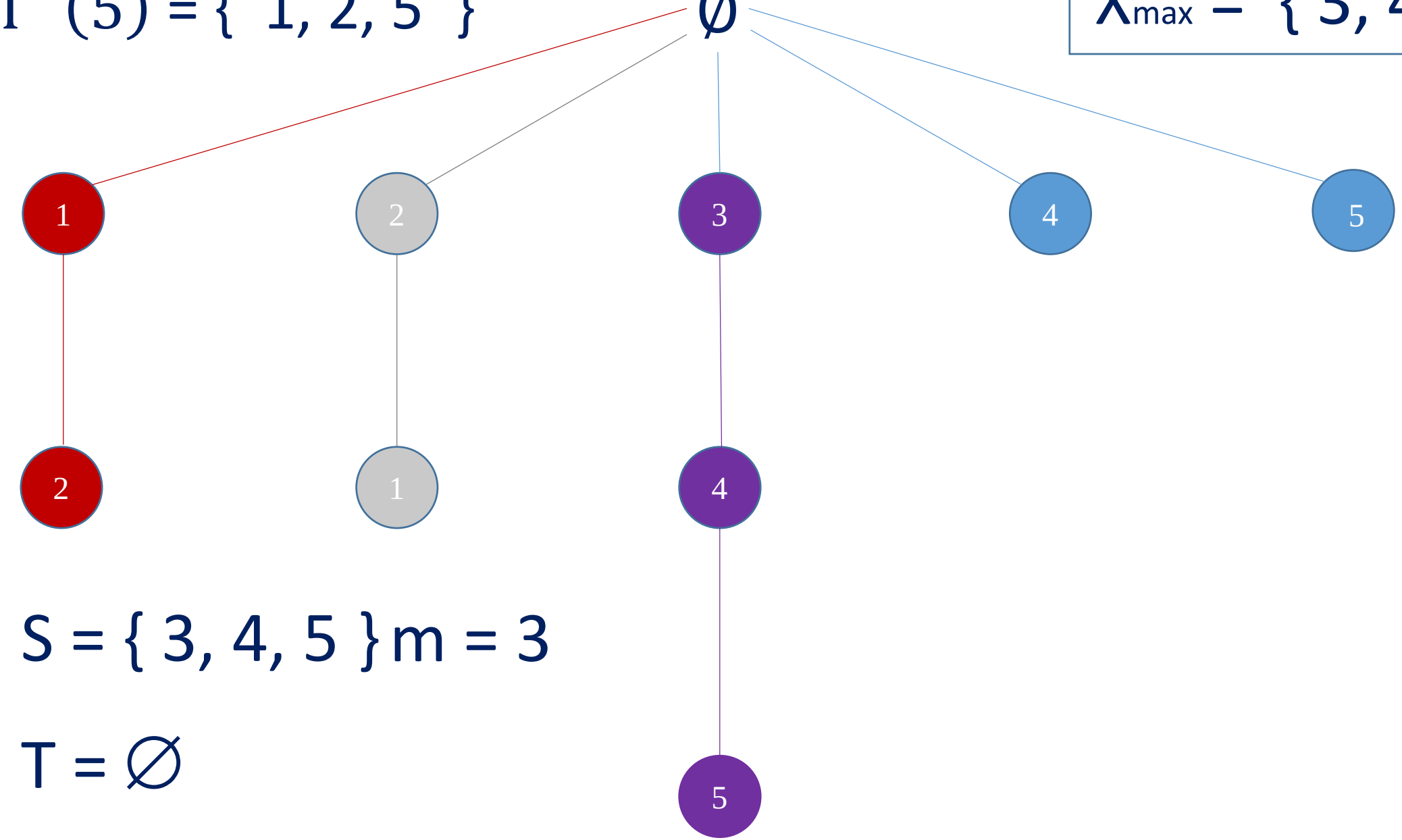


S = { 3, 4 } m = 2

T = { 5 }

$\Gamma^*(5) = \{ 1, 2, 5 \}$

$X_{max} = \{ 3, 4, 5 \}$

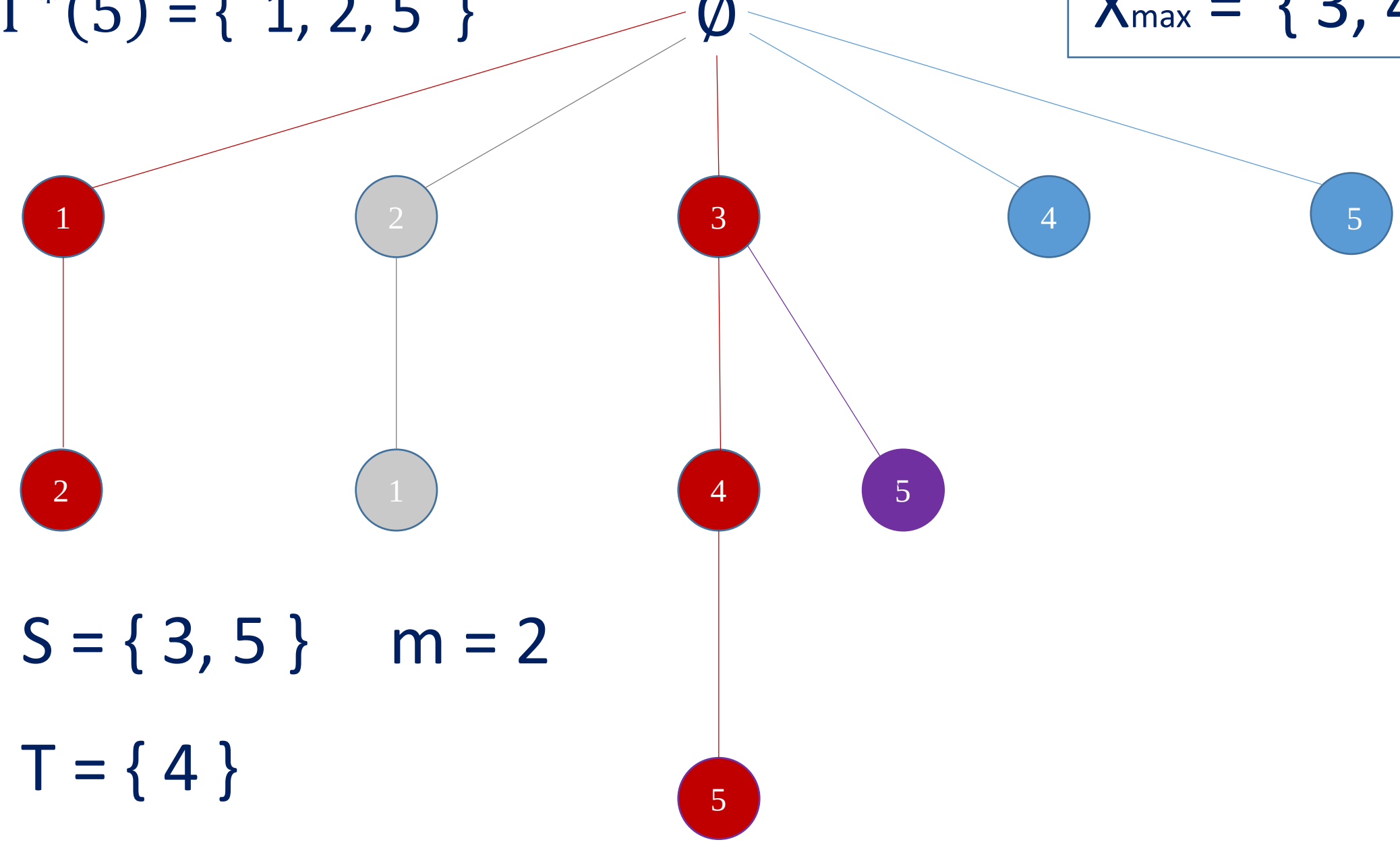


$S = \{ 3, 4, 5 \}$ $m = 3$

$T = \varnothing$

$\Gamma^*(5) = \{ 1, 2, 5 \}$

$X_{max} = \{ 3, 4, 5 \}$

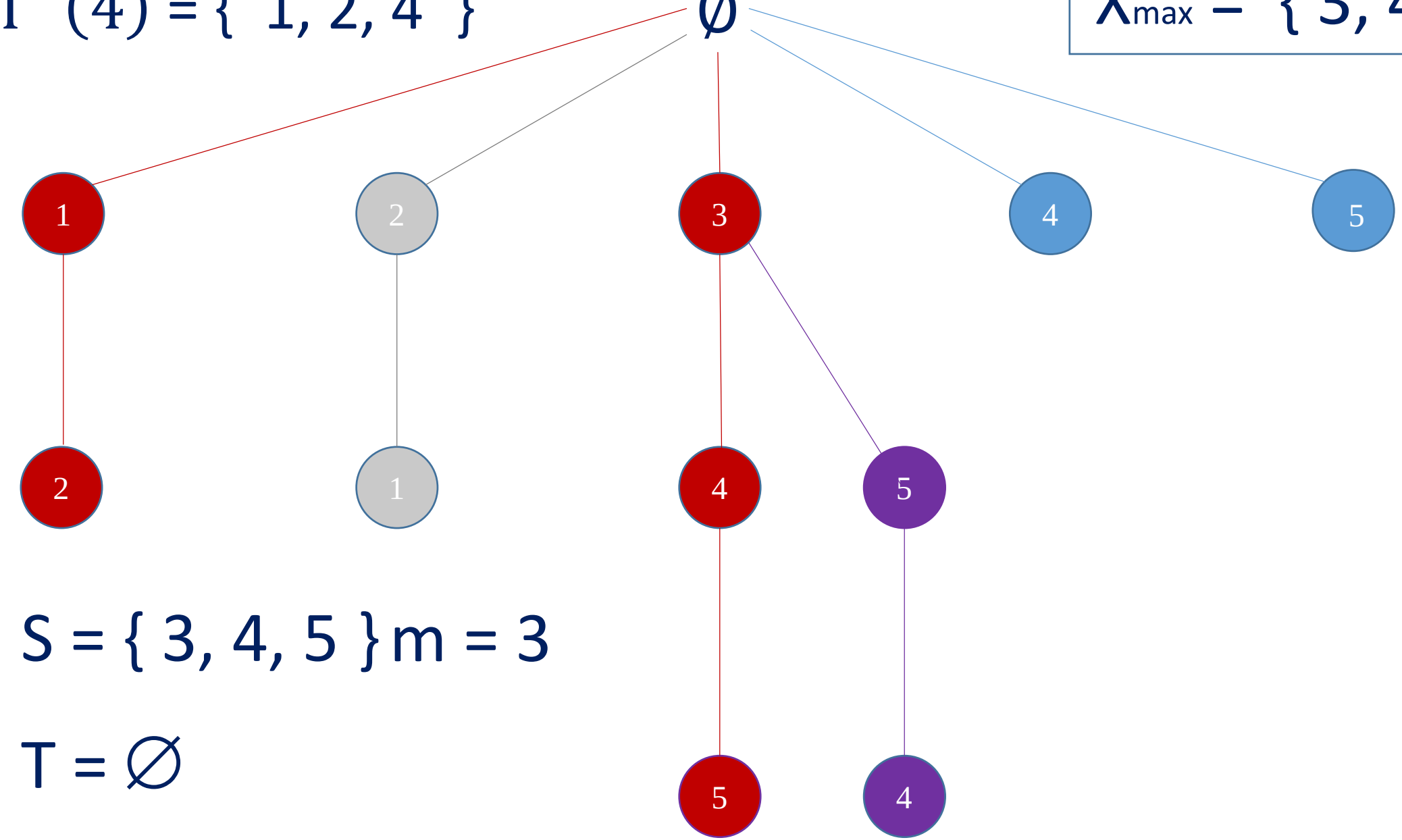


$S = \{ 3, 5 \}$ $m = 2$

$T = \{ 4 \}$

$\Gamma^*(4) = \{\ 1, 2, 4\ \}$

$X_{max} = \{\ 3, 4, 5\ \}$

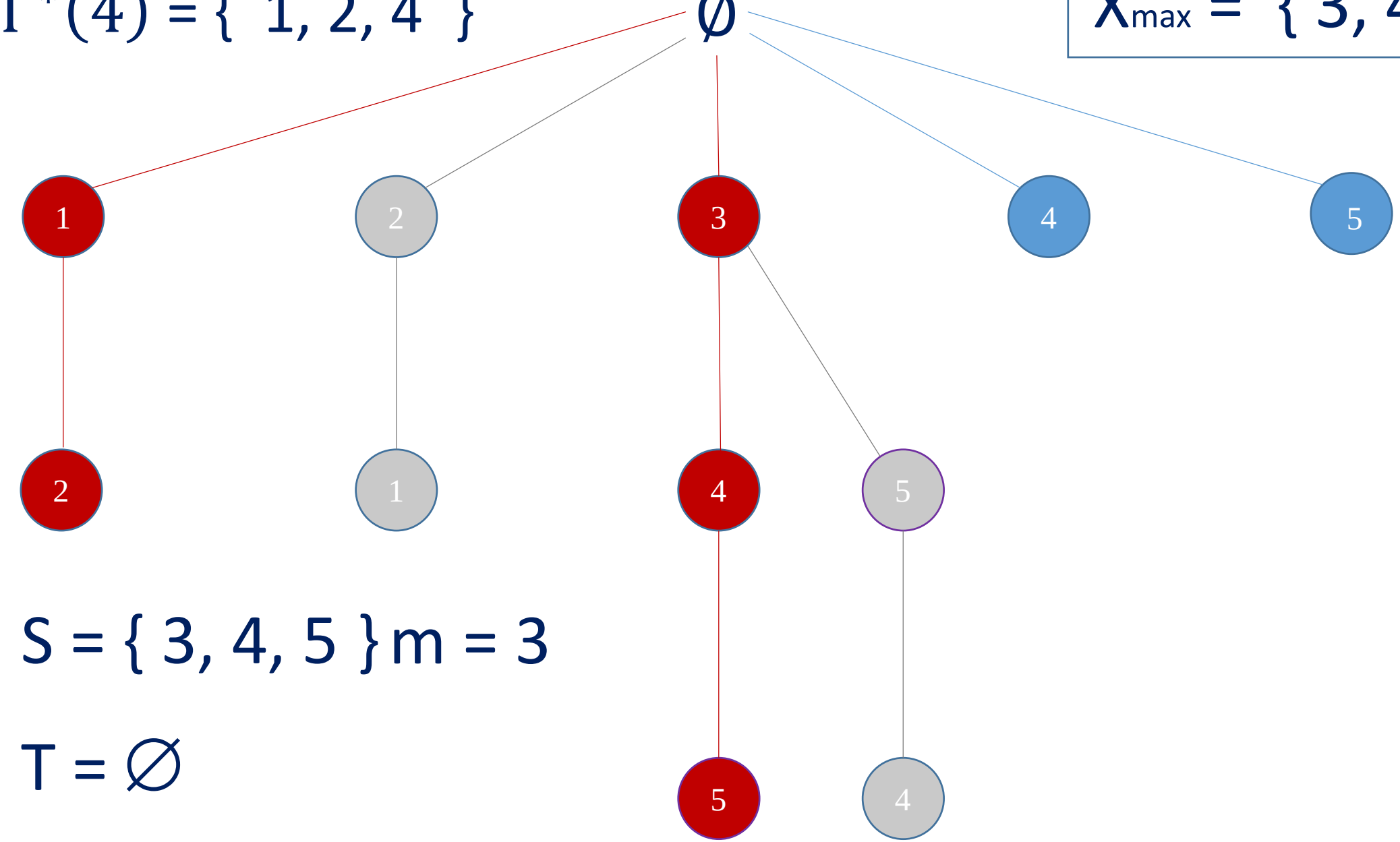


$S = \{\ 3, 4, 5\ \}\ m = 3$

$T = \varnothing$

$\Gamma^*(4) = \{ 1, 2, 4 \}$

$X_{max} = \{ 3, 4, 5 \}$

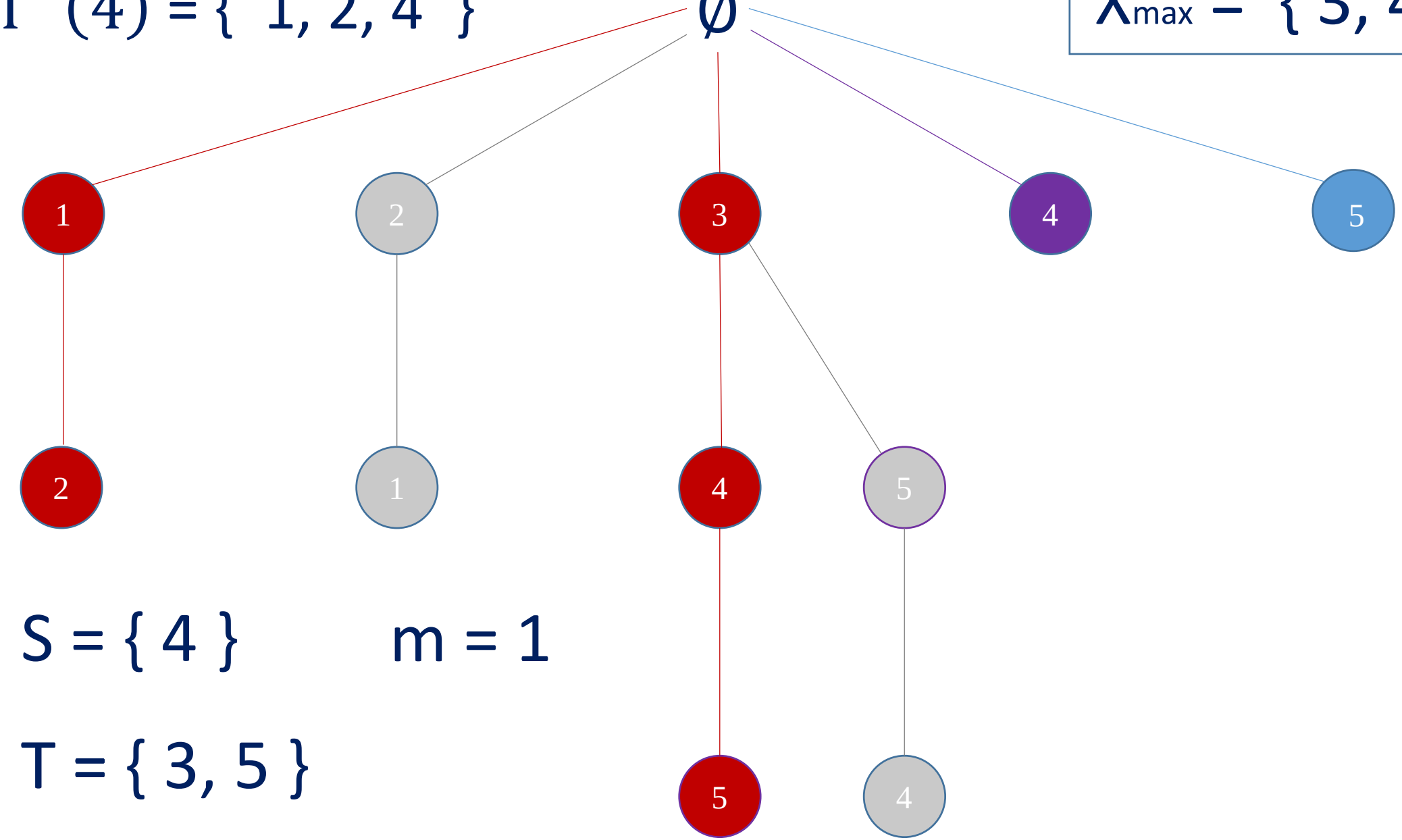


$S = \{ 3, 4, 5 \}$ $m = 3$

$T = \varnothing$

$\Gamma^*(4) = \{\ 1, 2, 4\ \}$

$X_{max} = \{\ 3, 4, 5\ \}$



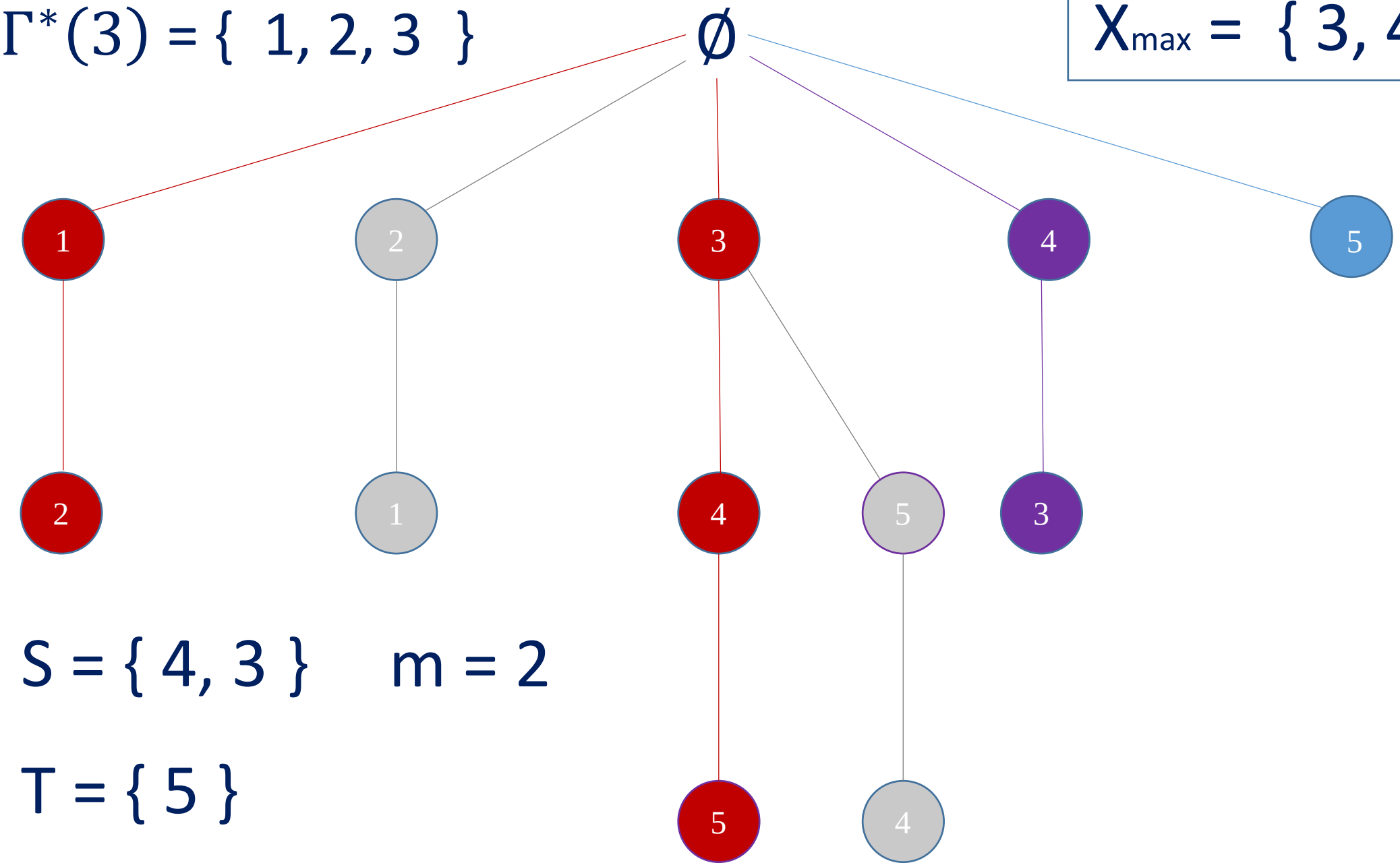
S = { 4 }

m = 1

T = { 3, 5 }

$\Gamma^*(3) = \{ 1, 2, 3 \}$

$X_{max} = \{ 3, 4, 5 \}$

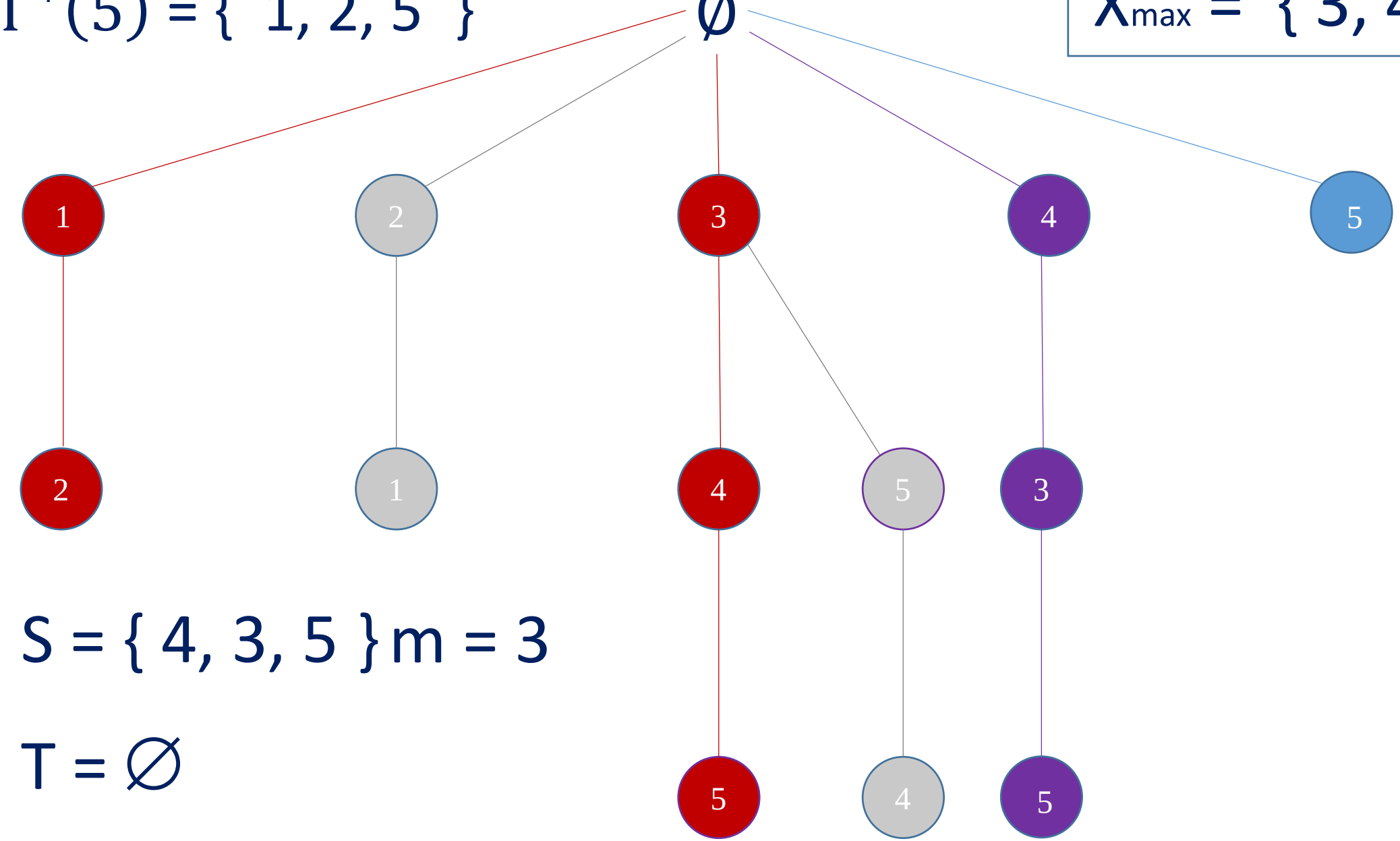


$S = \{ 4, 3 \}$ $m = 2$

$T = \{ 5 \}$

$\Gamma^*(5) = \{\ 1, 2, 5\ \}$

$X_{max} = \{\ 3, 4, 5\ \}$

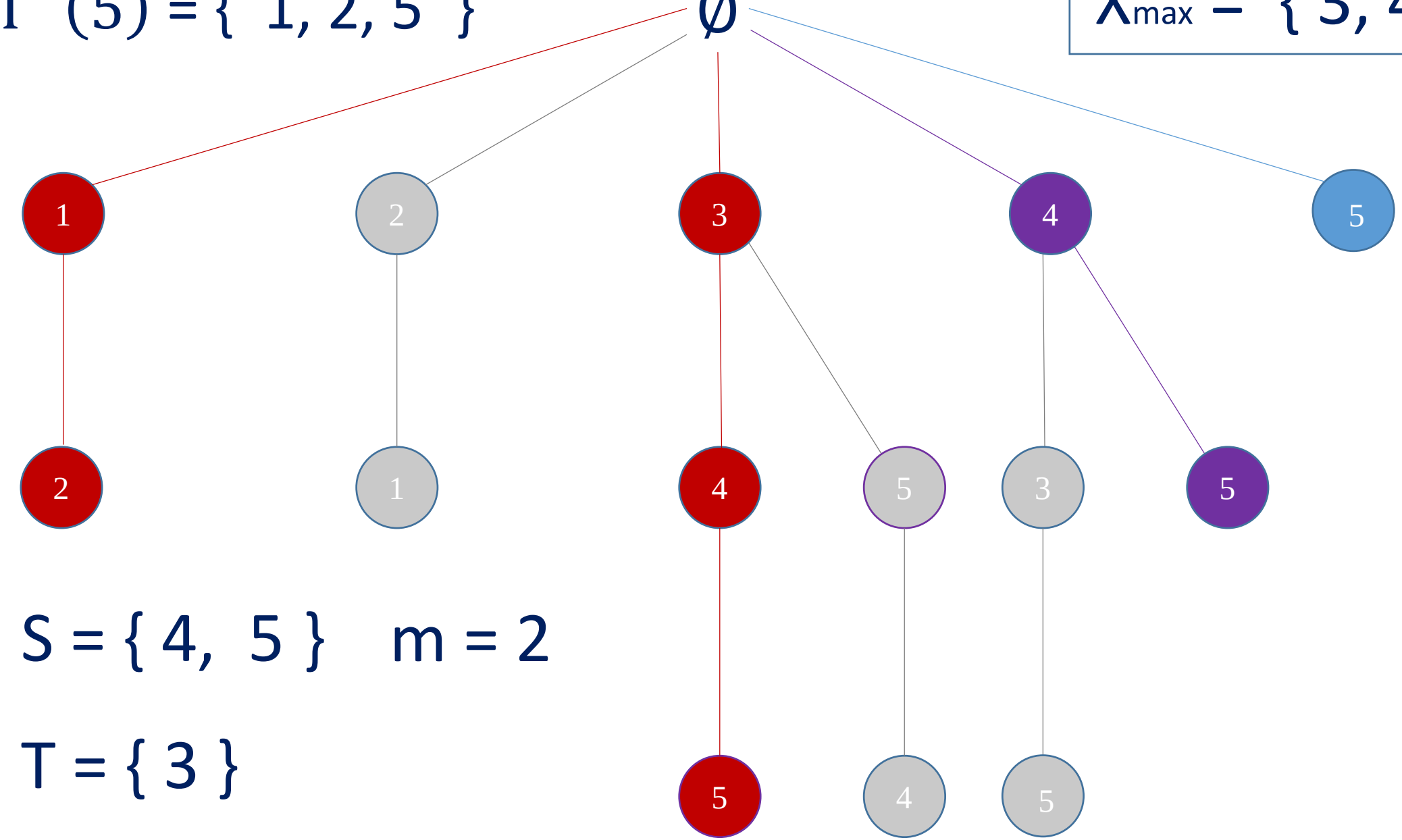


$S = \{\ 4, 3, 5\ \}\ m = 3$

$T = \varnothing$

$\Gamma^*(5) = \{ 1, 2, 5 \}$

$X_{max} = \{ 3, 4, 5 \}$

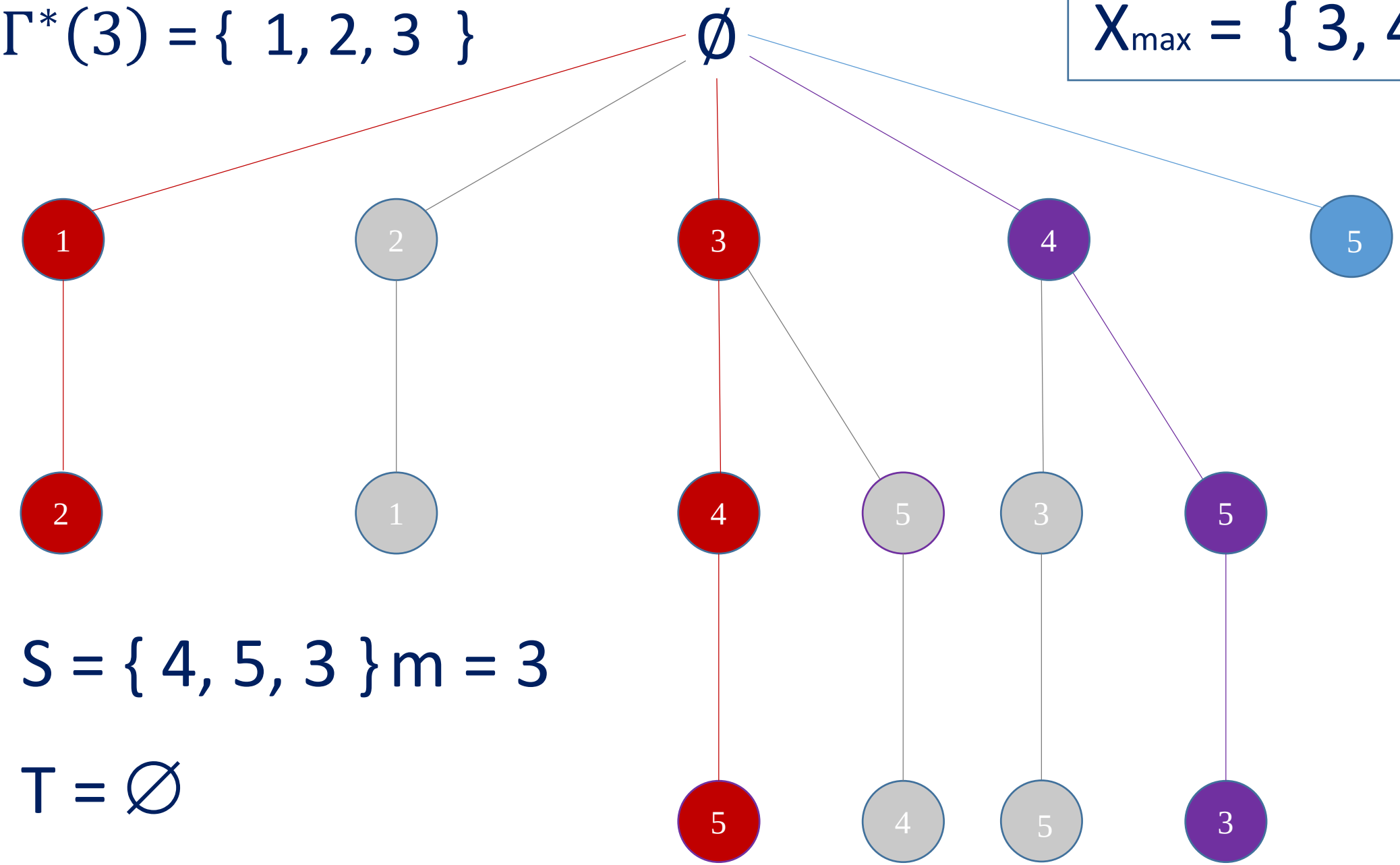


$S = \{ 4, 5 \}$ $m = 2$

$T = \{ 3 \}$

$\Gamma^*(3) = \{ 1, 2, 3 \}$

$X_{max} = \{ 3, 4, 5 \}$

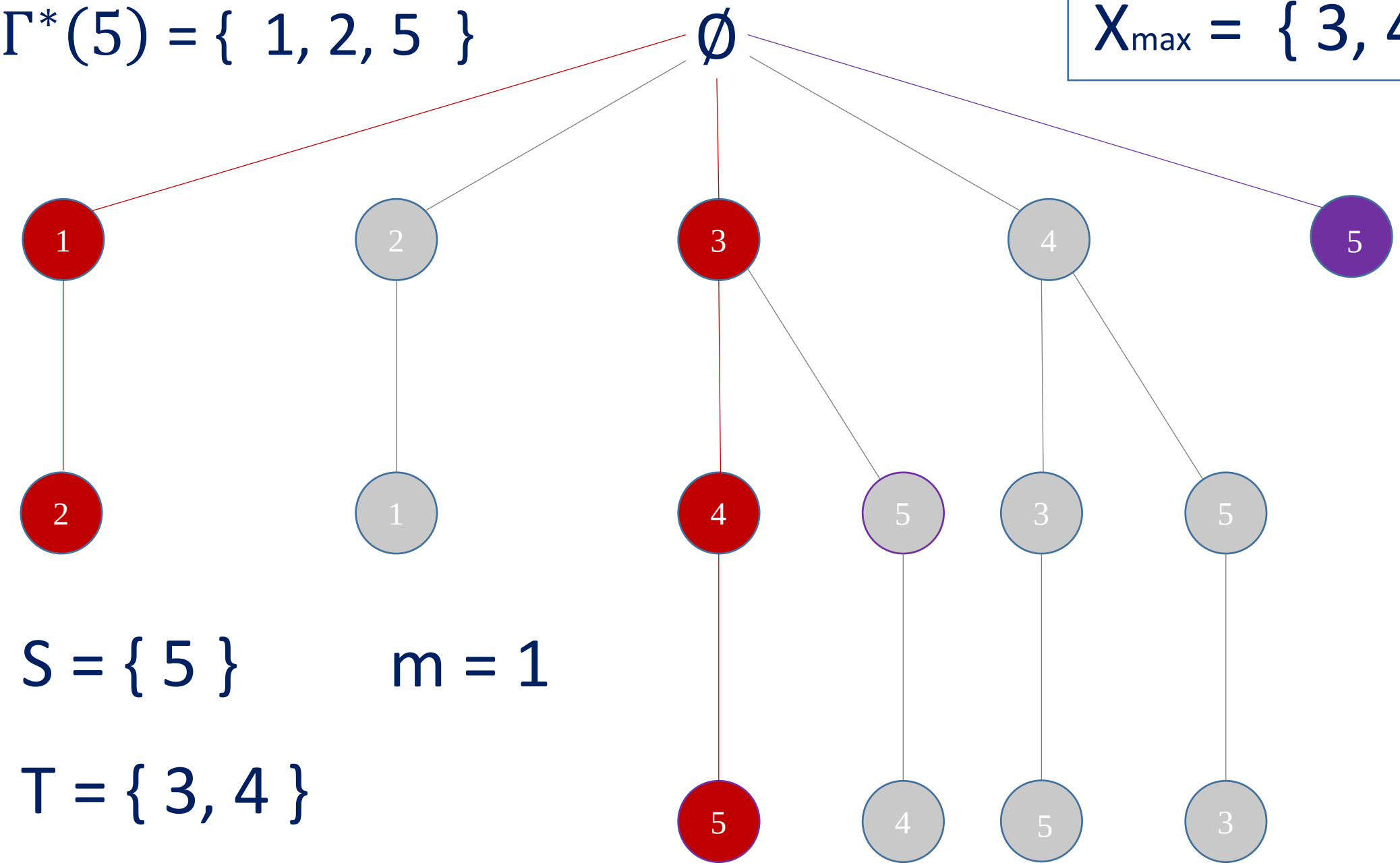


$S = \{ 4, 5, 3 \}$ $m = 3$

$T = \varnothing$

$\Gamma^*(5) = \{ 1, 2, 5 \}$

$X_{max} = \{ 3, 4, 5 \}$

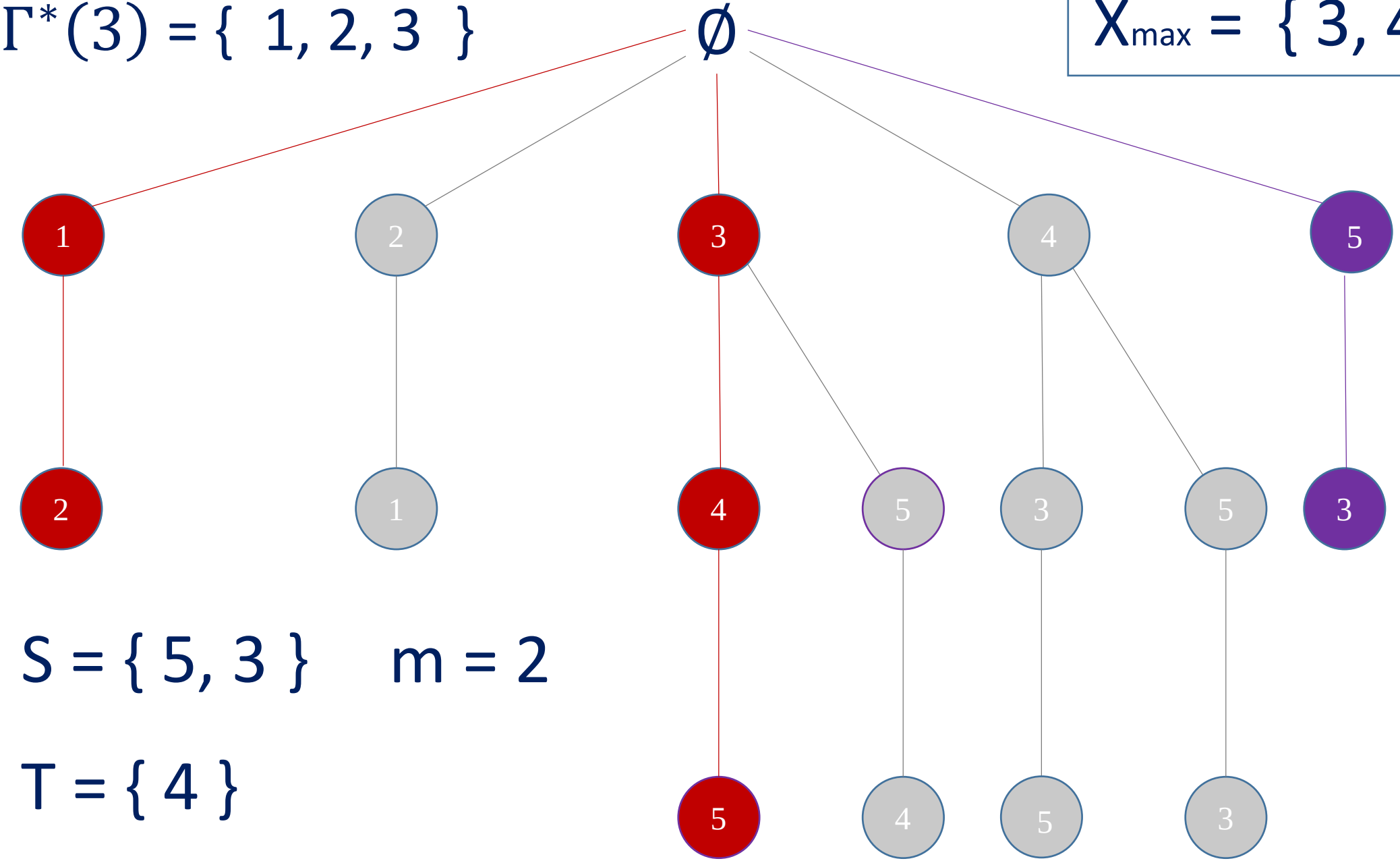


$S = \{ 5 \}$ $m = 1$

$T = \{ 3, 4 \}$

$\Gamma^*(3) = \{ 1, 2, 3 \}$

$X_{max} = \{ 3, 4, 5 \}$

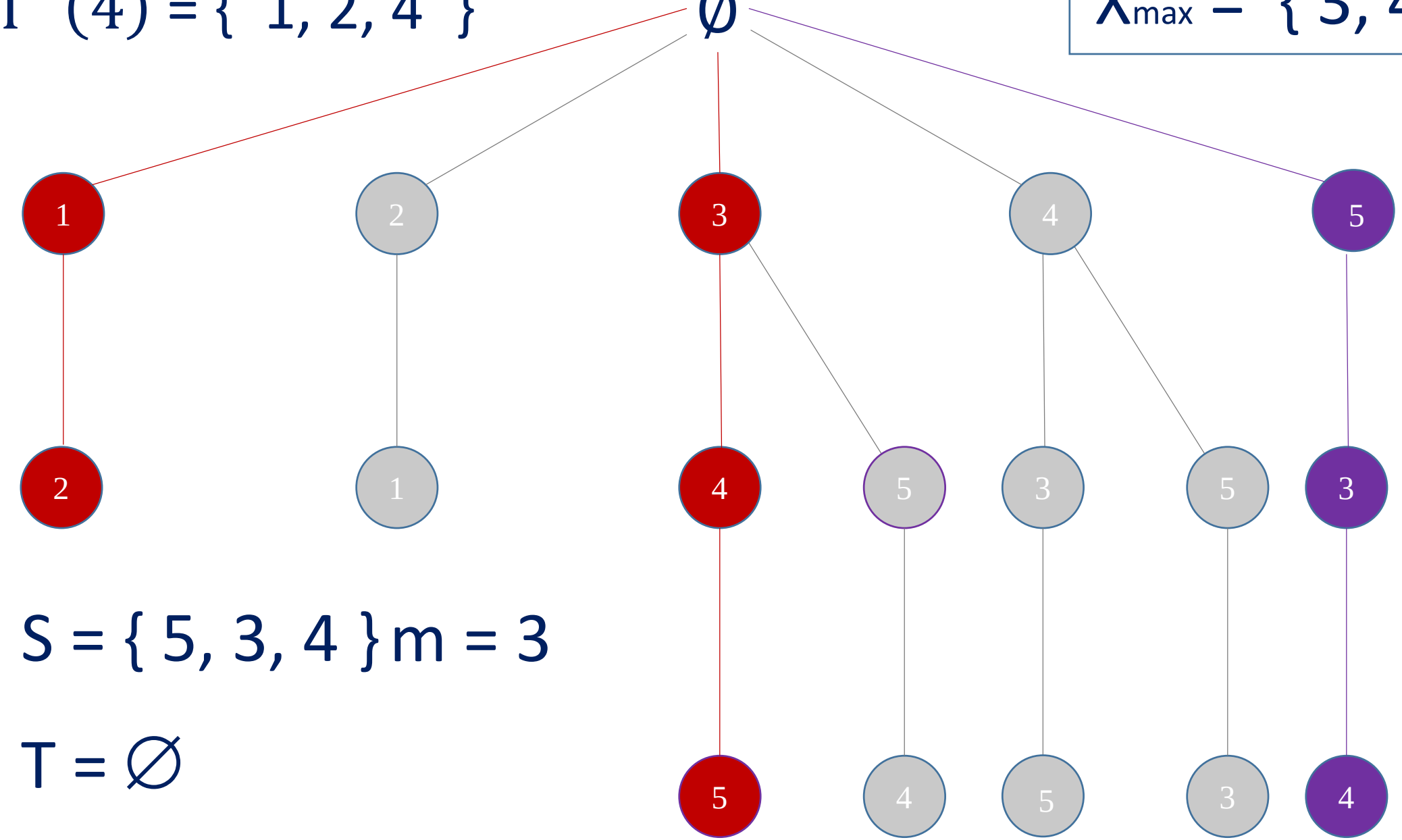


$S = \{ 5, 3 \}$ $m = 2$

$T = \{ 4 \}$

$\Gamma^*(4) = \{\ 1, 2, 4\ \}$

$X_{max} = \{\ 3, 4, 5\ \}$

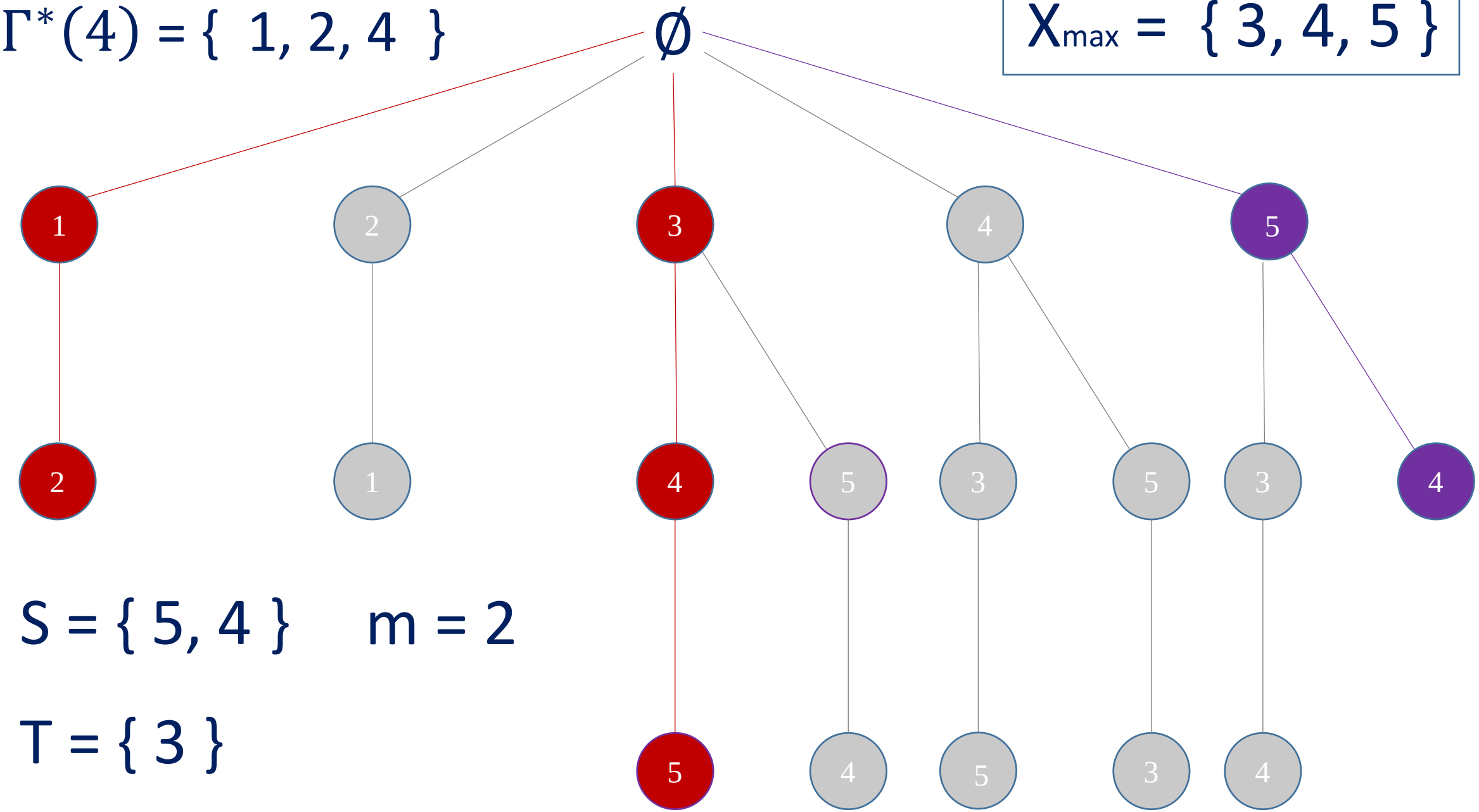


$S = \{\ 5, 3, 4\ \}\ m = 3$

$T = \varnothing$

$\Gamma^*(4) = \{\ 1, 2, 4\ \}$

$X_{max} = \{\ 3, 4, 5\ \}$

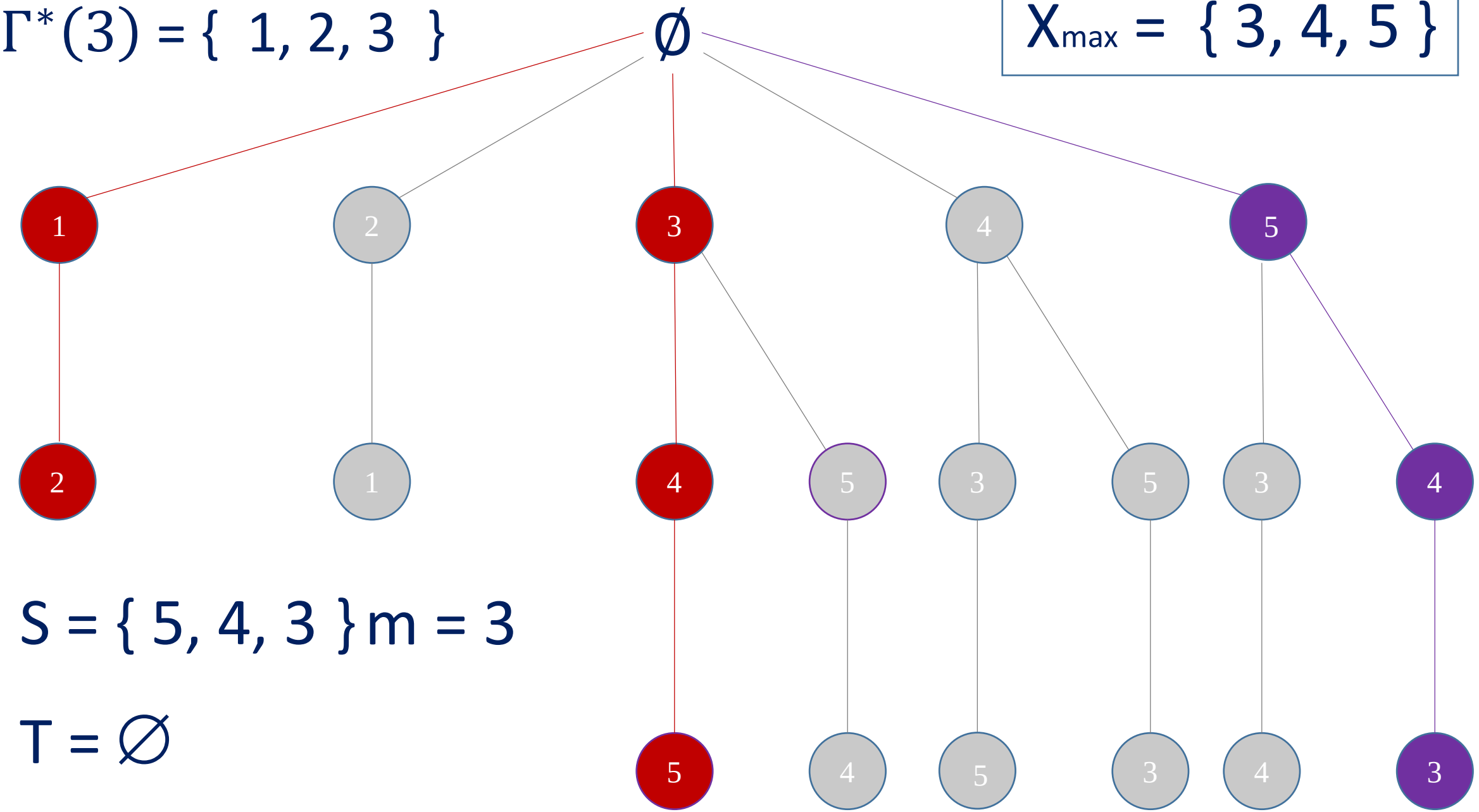


$S = \{\ 5, 4\ \}$ $m = 2$

$T = \{\ 3\ \}$

$\Gamma^*(3) = \{ 1, 2, 3 \}$

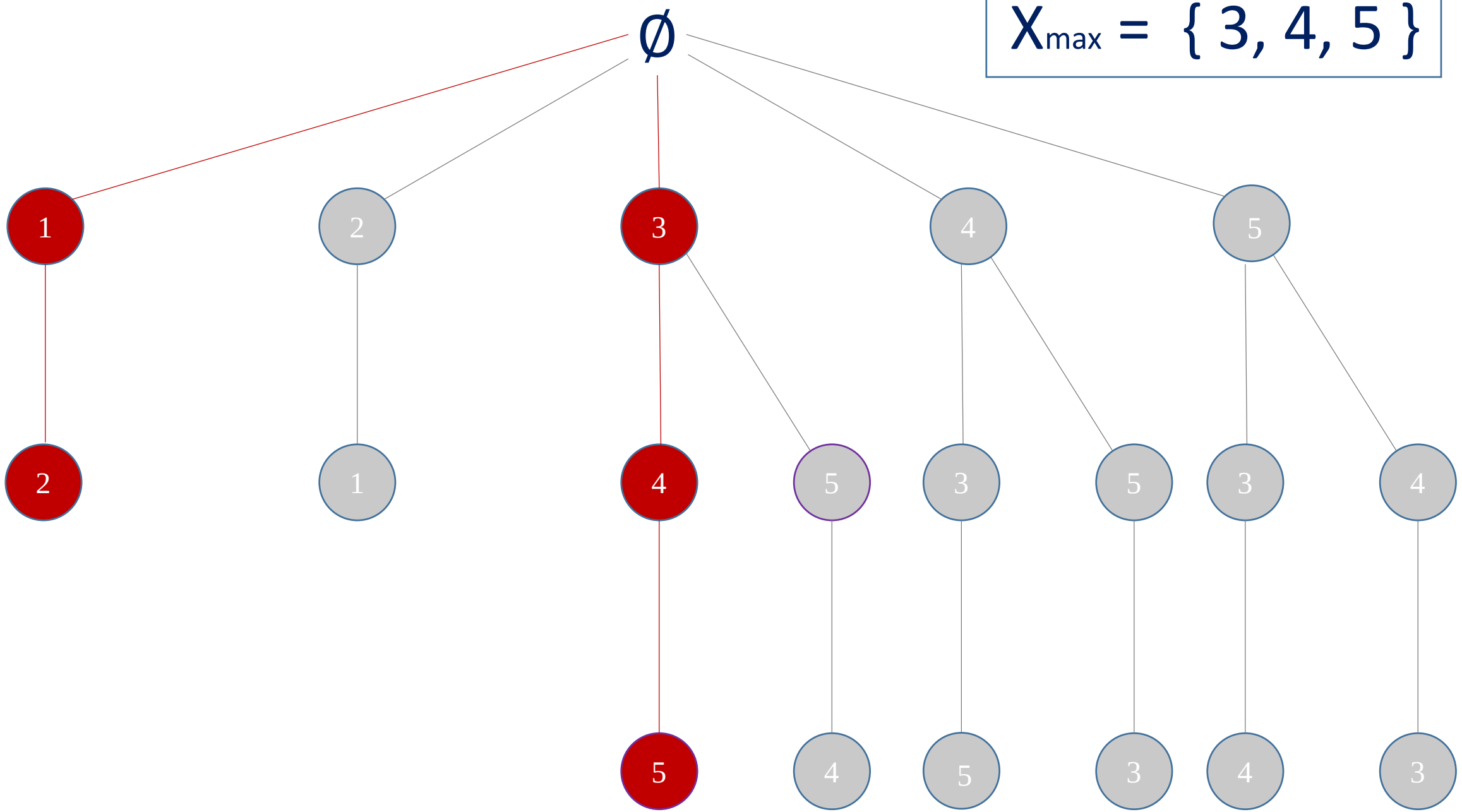
$X_{max} = \{ 3, 4, 5 \}$



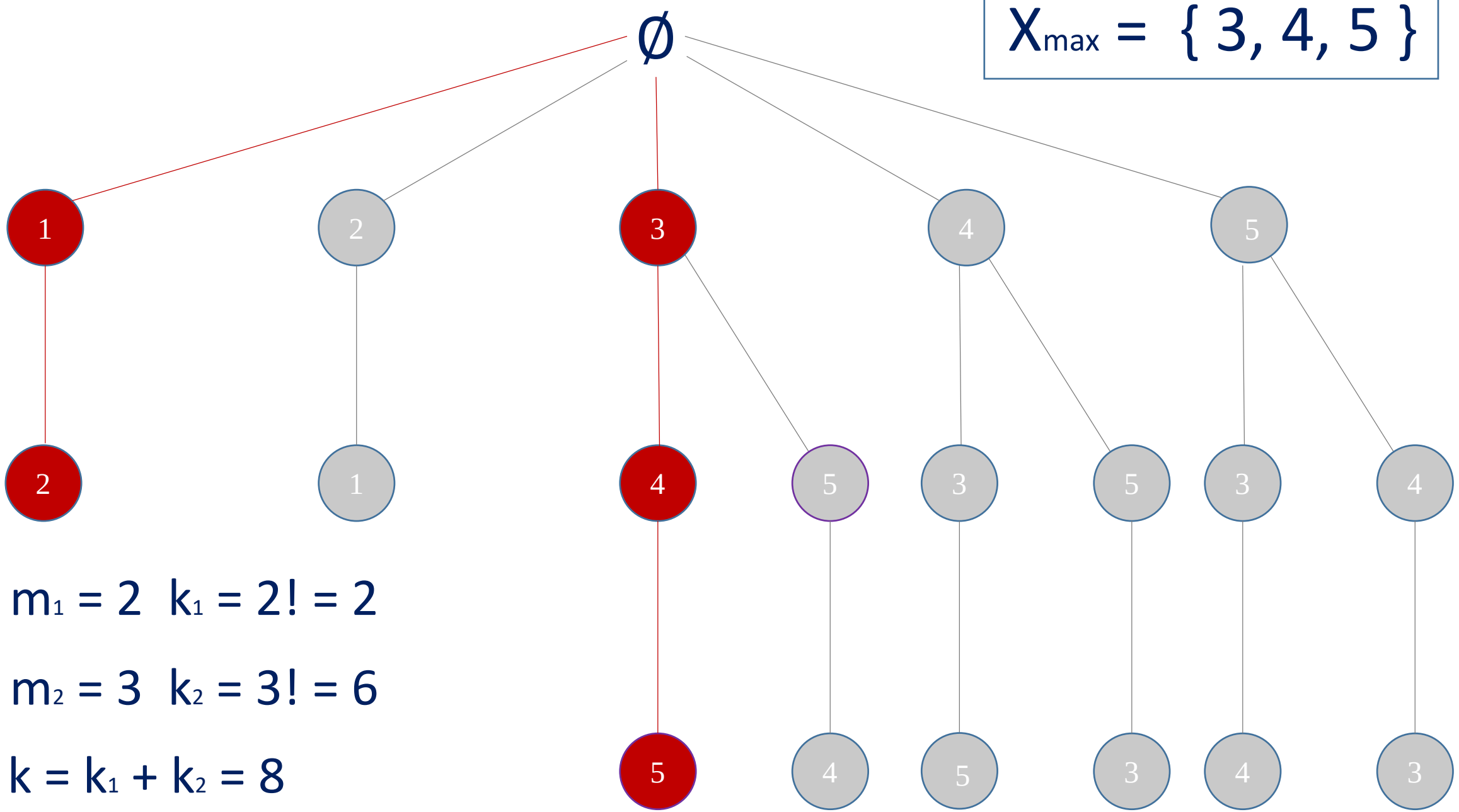
$S = \{ 5, 4, 3 \} m = 3$

$T = \varnothing$

$X_{max} = \{ 3, 4, 5 \}$



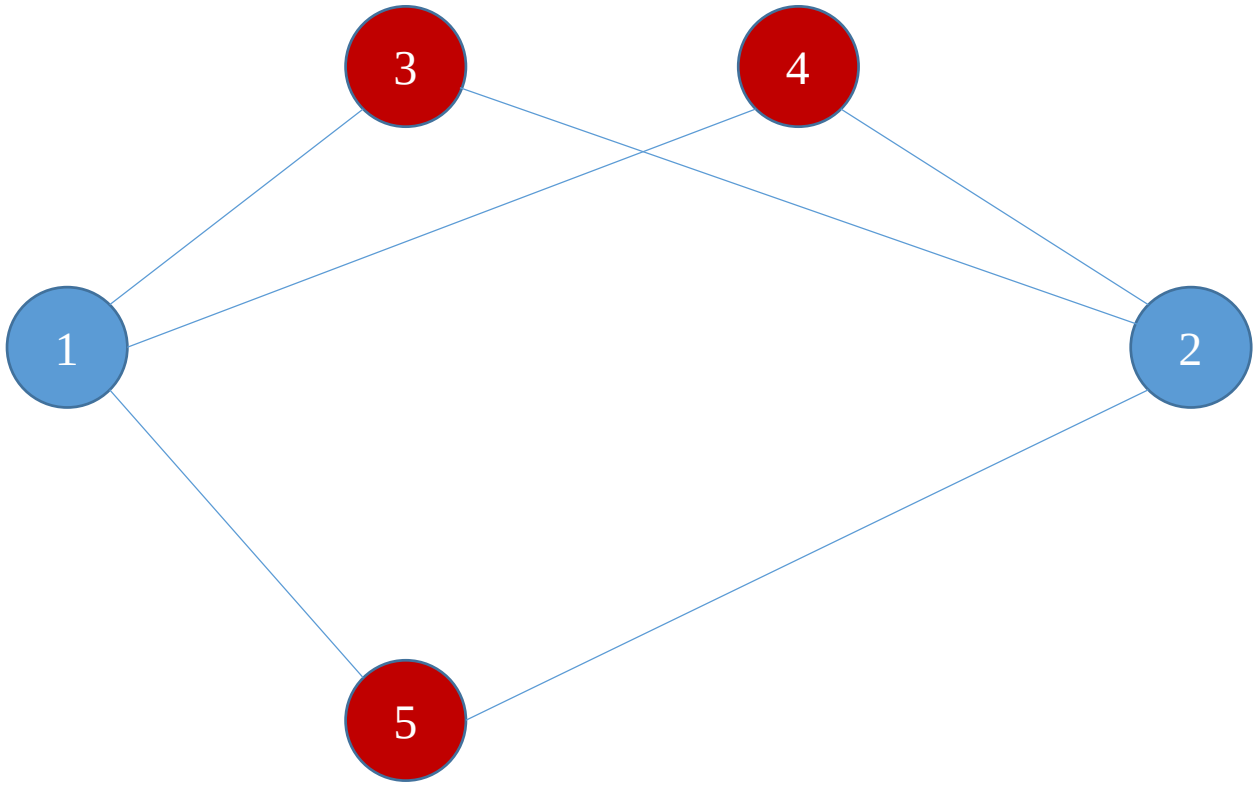
$X_{max} = \{ 3, 4, 5 \}$



$m_1 = 2 \quad k_1 = 2! = 2$

$m_2 = 3 \quad k_2 = 3! = 6$

$k = k_1 + k_2 = 8$


3
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